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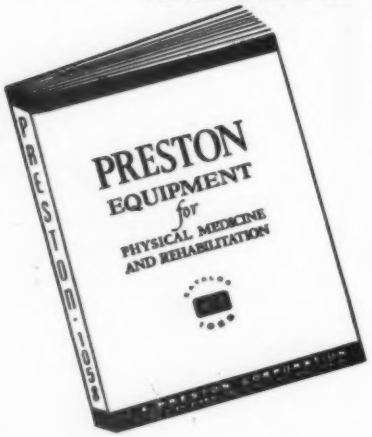

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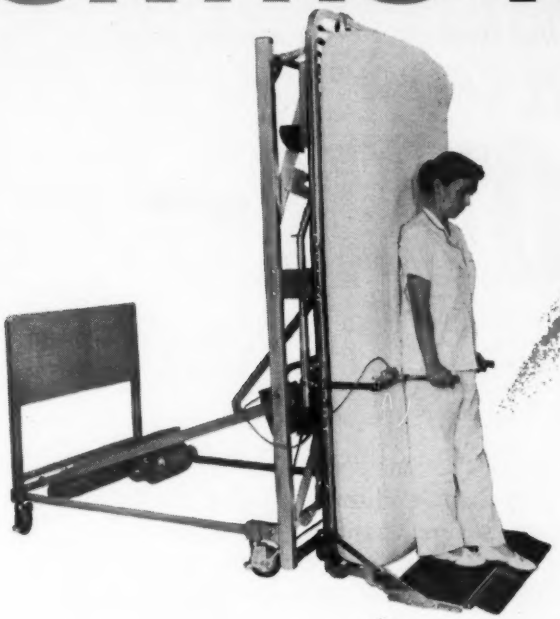

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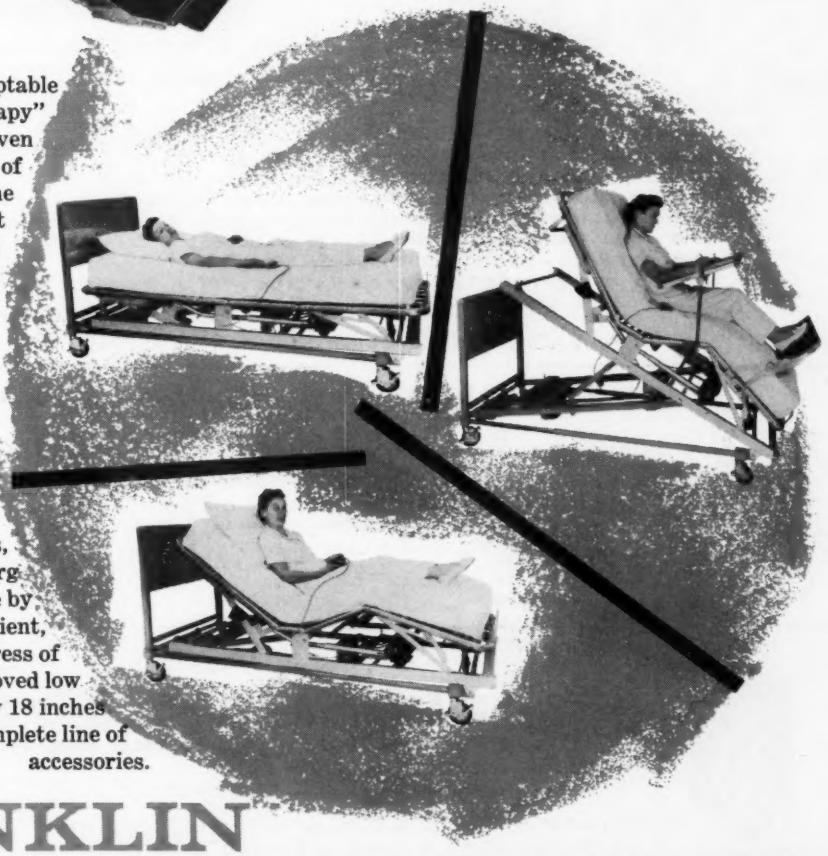

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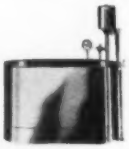
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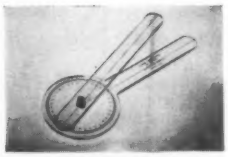
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REHABILITATION, A NATURAL RESOURCE*

MELVIN A. CASBERG, M.D.**

Introduction

The stringent demands of World War II on our nation's total economy sharply focused our attention upon the patriotic virtues of conservation. Even prior to an official declaration of war enemy action in distant lands had curtailed the import of certain necessary exogenous materials and as a result of this deprivation our research talents were geared to an all out effort in the development of synthetic substitutes. In the midst of such shortages, the terms "waster" and "traitor" became virtually synonymous, so much so that the very act of throwing away an empty toothpaste tube was sufficient cause to precipitate a guilt complex.

As the war effort moved on it became increasingly apparent that conservation was related not only to material supplies but even more so to the area of human resources. During the Battle of the Bulge, General Eisenhower found our manpower reserves seriously depleted, and this in spite of the fact that our forces had been engaged in heavy fighting for a relatively short period of time.

Under these critical pressures our society, accustomed to the smug complacency of thinking in terms of unlimited resources, was suddenly faced with the grim realization that our very survival depended upon the efficient utilization of resources which were very definitely limited. Unfortunately, in the precipitate demobilization following the war's end, many lessons in conservation learned at rather high cost were soon forgotten.

With the outbreak of Korean hostilities there were renewed in the minds of certain of our leaders disturbing fears of the limitations of our nation's human resources. The Ford Foundation at that time sponsored a survey related to manpower problems and the ensuing report[1] underscored that, "The free world faces for an indefinite period a state of international distrust in which the numerical odds are greatly against it. Manpower and human skills will be the critical supply items for America for many years to come."

The undulations of public interest in this nation's manpower had fluctuated but mildly since the days of the Korean truce, until once again in the light of Russian scientific accomplishment, as initially manifested by the orbiting of an earth satellite, the charted portrayal of interest in human resources has risen sharply. As in the bleak winter days of the Battle of the Bulge, we again face the fact of a limited manpower pool and the need for efficient utilization and intelligent conservation. There are those who, in the wake of foolish desperation, would follow blindly the Russian techniques of regimented life and education not realizing that under these terms of reference with the numerical odds so strongly stacked against us, defeat in the long run would be inevitable. The survival of this nation and the western world lies not in a quantitative matching of human resources but rather in the area of qualitative development. This concept as epitomized in the worth and dignity of the individual is the very cornerstone of our way of life. It is only in such a context that the title of this presentation, "Rehabilitation, A National Resource," assumes its proper perspective.

Facts About the Disabled.

An extensive long-term survey[2], as yet incomplete, projects a national population of approximately two and a quarter million disabled people possessing the potential of rehabilitation to the point of remunerative employment. Furthermore, it has been estimated[3] that each year an additional quarter of a million disabled persons are in need of vocational rehabilitation. No one would dare argue the importance of such a large population segment to our nation's pool of human resources.

Chronic illnesses, including the degenerative diseases, tuberculosis, mental disorders, diabetes, cancer and various eye conditions account for 88% of all disabling conditions.[4] Of the remaining fraction of con-

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*Presented at the Joint Conference on Rehabilitation, Austin, Texas, April 11, 1958.

**Vice-President for Medical Affairs, The University of Texas.

[1] *A Report on the National Manpower Council*, Graduate School of Business, Columbia University, 1954.

[2] *New York Times*, Sunday, October 21, 1956: "Study of the Handicapped" by Howard A. Rusk, M.D., A Report on the Kansas City Survey.

[3] *Number of Disabled Persons in Need of Vocational Rehabilitation*, Rehabilitation Service Series Number 274, Division of Research and Statistics, Office of Vocational Rehabilitation, U.S. Department of Health, Education and Welfare, June 1954.

[4] *Facts on the Major Killing and Crippling Diseases in the United States Today*, The National Health Education Committee, Inc., 1957.

tributing causes, occupational accidents account for 5%; home, highway and all other accidents 5%; and congenital deformities make up the remaining 2%.[5]

Public assistance programs for the maintenance of disabled people costs the nation over one-half billion dollars annually. The annual payments into the three programs with congressional authorization alone amount to approximately 73 million dollars for Aid to the Blind; 165 million dollars for Aid to the Permanently and Totally Disabled; and 128 million dollars for Aid to Dependent Children in families where one or both of the parents is disabled.[6]

Simple arithmetical calculations have shown that the cost of rehabilitation is approximately 80% of the amount required to maintain the disabled at public expense for one year. In the 1955 Annual Report of the Office of Vocational Rehabilitation of the U. S. Department of Health, Education and Welfare, it is estimated that those persons vocationally rehabilitated will within three years pay back in federal income taxes the total Federal funds invested in their salvage.

The above apparent emphasis on dollar values is not intentional, despite the fact that these are the only values appreciated by some of our nation's leaders. Rehabilitation is a resource with a multiplicity of impacts on our national life. Consider for instance the creative possibilities of this army of over two million with recruits pouring in at an annual rate of over a quarter million. Is this a potential that our nation can afford to neglect?

Monetary values cannot be equated to the pride of personal accomplishment or the satisfaction of independence. These are emotional forces difficult to evaluate but none-the-less potent in their effect, not only on the person rehabilitated but also, through him, on the many human contacts in his immediate social environment. How does one measure the improved effectiveness of the husband whose erstwhile domiciliary father-in-law has been rehabilitated to gainful outside employment? These are substantial profits accruing to the positive side of the rehabilitation ledger which do not lend themselves readily to mathematical computations and yet contribute greatly to the column of human values. Ultimately is not this the side of the ledger that really differentiates our ideology from that practiced behind the iron curtain?

Facts About Rehabilitation

Primitive man destroyed the disabled, possibly not so much because of their nonproductivity as from a sense of pity. Humane reasons today frequently dictate the destruction of the maimed animal and in like manner the cave man dispensed this particular brand of mercy. The destruction of physically disabled children was sanctioned by the law of ancient Rome.

Ambroise Pare', the military surgeon of the 16th century, in describing a particular campaign, writes in his diary:[7]

> We thronged into the city and passed over the dead bodies and some that were not dead, hearing them cry under the feet of our horses, which made a great pity in my heart, and truly I repented that I had gone forth from Paris to see so pitiful a spectacle. Being in the city, I entered a stable thinking to lodge my horse and that of my man, where I found four dead soldiers and three who were propped against the wall, their faces wholly disfigured, and they neither saw, nor heard, nor spoke, and their clothes yet flaming from the gunpowder which had burnt them. Beholding them with pity there came an old soldier who asked me if there was any means of curing them. I told him no. At once he approached them and cut their throats gently and without anger. Seeing this great cruelty, I said to him that he was an evil man. He answered me that he prayed God that when he should be in such a case, he might find someone who would do the same for him, to the end that he might not languish miserably.

Thanks to our medical science modern man need not experience the physical tortures which in years past called forth so drastic a remedy. Yet despite this progress there still exists a certain passive acceptance of disability condemning the disabled to a life of virtual death.

It seems paradoxical that a national resource of such magnitude as that of rehabilitation should necessitate constant defense on the part of its protagonists. Though it appears relatively simple to demonstrate in terms of human and economic salvage that the disabled of our nation present a vast resource, these facts either are not generally known, or, if known, are not accepted by the public. Thus one of the major problems confronting progress in rehabilitation is that of public education.

The first step in this educational program must relate to the dissemination of information concerning the actual possibilities and accomplishments of rehabilitation. Until very recent years disability from most chronic illness was considered to be an irreversible process and was accepted with a fatalistic finality. In the minds of many this situation still prevails and the remarkable accomplishments of rehabilitative therapy remain virtually unknown. Disability, especially of the older population, far too frequently carries a connotation of doom. Into this atmosphere of defeat-

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[5] ***Hearings before a Subcommittee of the Committee on Labor and Public Welfare,*** U.S. Senate, 83rd Congress, 2nd Session on The President's Health Recommendations and Related Matters, Washington, U.S. Government Printing Office, 1954.

[6] ***Rehabilitation Service Series Number*** 269, Division of Research and Statistics, Office of Vocational Rehabilitation, U.S. Department of Health, Education and Welfare, May 1954.

[7] Samuel Rapport and Helen Wright, *Great Adventures in Medicine,* Dial Press, 1952.

ism education must project the optimistic message of human salvage; salvage not only of the body but of the mind and of the spirit as well. Just as recent scientific discoveries have contributed to the conquest of a great majority of infectious diseases, in like manner therapeutic accomplishments in the field of rehabilitation have made it possible for many of the disabled to enjoy again an able life of productivity. This story must be told the public again and again in a convincing and convicting manner.

Educational efforts must also be directed toward the acceptance of the handicapped by the employer. It is frustrating to all concerned to rehabilitate for a non-existant job. Industry should be shown that the handicapped person properly trained in many instances can outperform the ordinary man. The photographic darkroom, for example, offers an opportunity for the well-trained blind employee with his highly developed senses of touch, smell and hearing. The strong muscles of the paraplegic make him particularly well adapted to the performance of bench jobs. As noble as is the motivation of pity or charity, the employer of the qualified disabled employee must be led to appreciate the motivation of productivity.

The credo of Abilities, Inc., a Long Island organization employing only the handicapped, reads as follows:

> I do not choose to be a common man. It is my right to be uncommon—if I can. I seek opportunity—not security. I do not wish to be a kept citizen, humbled and dulled by having the state look after me. I want to take the calculated risk; to dream and to build; to fail and to succeed. I refuse to barter incentive for a dole. I prefer the challenges of life to guaranteed existence; the thrill of fulfillment to the stale calm of Utopia. I will not trade a freedom for a beneficence nor my dignity for a handout. I will never cower before any master nor bend to any threat. It is my heritage to stand erect, proud and unafraid; to think and act for myself, enjoy the benefit of my creations, and to face the world boldly and say, "This I have done." For our disabled millions, for you and me, all this is what it means to be an American.

Recruits from the ranks of the disabled with motivations as presented in the above credo make not only productive employees, but just as important to the discriminating employer, they leaven their performance with a deep sense of loyalty. This is a gospel which must be preached to industry, both large and small, until the message finally yields dividends in the employment of the handicapped. The public must be informed that rehabilitation is not alone a matter of charity or pity but a national resource which, in the face of a limited manpower pool, we cannot afford to waste.

Careful follow-up studies[8,9,10] of the disabled who have been rehabilitated through the State-Federal Vocational Rehabilitation Program have shown that 80% of the rehabilitants have maintained their working status in the same or better jobs and have increased their earnings proportionate to other workers.

A Task Force on the Handicapped[11] established by the Manpower Policy Committee of the Office of Defense Mobilization made a two-year study comparing 11,000 handicapped workers with 18,000 unimpaired workers. In their final report of this study the Task Force stated that the rehabilitant workers were adaptable to the conditions of the job; they were productively equal or even superior to their non-handicapped co-workers; they established enviable job safety records; their absence from work was no more than that of other workers; they were loyal to their employers and did not flit from job to job.

The properly motivated rehabilitant should possess sufficient insight to appreciate that the mere fact of disability is not a blank check to employment. It is his responsibility to prepare himself for the occupation of his choice. It is our responsibility to make available for the disabled not only the personnel and facilities for physical, mental and spiritual rehabilitation but also the opportunity for vocational rehabilitation. No one is more to be pitied than the handicapped person who has lost all sense of personal pride and, refusing to help himself, demands public assistance. By the same token no one is more to be admired than the rehabilitant who in the words of the credo quoted above states, "I want to take the calculated risk; to dream and to build; to fail and to succeed. I refuse to barter incentive for a dole." This problem is a two-way street, one way of which relates to the motivation of the disabled, and without his active help there is no satisfactory solution.

The Social Factors in Rehabilitation

The emphasis thus far in this presentation has been on the rehabilitation of the disabled for the purpose of creative and remunerative employment. No one would deny the significance of this program both to our national resources and to those of the rehabilitant. However, we must not forget that this vocationally salvaged individual lives in a society, and the degree of his return toward normalcy is dependent to a considerable extent on his acceptance of his neighbors and their acceptance of him.

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[8] Helen M. Vavra, ***Self-Employment in the State-Federal Civilian Vocational Rehabilitation Program,*** Office of Vocational Rehabilitation, Rehabilitation Series No. 65, 1948.

[9] ***The Economic Value of Vocational Rehabilitation,*** Vocational Rehabilitation, U.S. Office of Education, Misc. 2552, 1939.

[10] Sol L. Warren, "A Comparative Analysis of the Post-Discharge Experiences of Tuberculosis Patients," ***Amer. Review Tuberculosis,*** Feb. 1954.

[11] ***Report to the Chairman, Manpower Policy Committee, Office of Defense Mobilization, by the Task Force on the Handicapped,*** Wash. D.C., Jan. 25, 1952.

The ultimate success of this concept of rehabilitation as a national resource does not lie only in legislation at the federal, state or even community level, but also lies in the acceptance of this responsibility by the individual citizen. Though the treatment of the specific disability and vocational training requires the services of special personnel, the problem of total rehabilitation remains unsolved until you and I as individuals in a community contribute our share.

You as a teacher in the community high school must with an uncanny vision and devoted personal effort project that handicapped youngster in your classroom into a future Steinmetz. Regardless of the adequacy or inadequacy of his physical rehabilitation it will be your encouragement, direction, challenge, comfort and leadership that ultimately will make this vision a reality.

You as an employer in the community must see in the rehabilitant the potential for productive activity. It is your privilege and opportunity to instill confidence in this employee and thereby reap not only the material benefits of his loyal efforts but also the personal satisfaction of having contributed to the creative pride and independence of a fellow man.

You as a housewife in the community must learn to accept the minor discomforts of taxying the blind piano tuner to your home. Yours will be the reward of observing fingers and ears, made even more acutely sensitive by the loss of sight, work in the common purpose of perfecting an instrument of harmony.

You as a surgeon in the community must realize that the amputation of that young lad's leg, though technically a perfectly performed surgical procedure, does not in itself terminate your responsibility to the patient. The metal torture of social adjustment in school and community may far exceed the physical suffering following the car accident which mangled his leg. Yours is the continuing responsibility of friendship and encouragement in his psychological rehabilitation. Yours is the challenge to thwart his self pity and direct energies into competitive arenas other than the football field.

You as the spiritual mentor of a community flock must play a significant role in the total rehabilitation of the handicapped. The statement in Holy Writ that man shall not live by bread alone is relevant to the problem at hand. Though the wasted legs be braced, if the spirit is broken the rehabilitation is incomplete. Yours is a special charge to succor those who face the world physically incomplete and to imbue them with a power divine in origin.

You as a community must bestow the friendly warmth of social acceptance to those recently discharged from mental institutions. The final touches of rehabilitation in such individuals are best applied by the social environment of a free community. This is a matter of increasing significance in the light of recent trends as related to the therapy of mental illness. No treatment can substitute for the warmth of a friendly social environment. Also by way of contrast the trifling gestures of social non-acceptance can in one fell swoop negate months of highly specialized therapeutic effort.

Thus it becomes quite evident that rehabilitation is not the responsibility of a few technical personnel alone nor is the process completed with the restoration of physical or mental function. Furthermore, it has been amply demonstrated that motivation is related not only to the rehabilitant himself but also to the society into which he must ultimately be absorbed.

Conclusion

In conclusion, though humanitarian motives will always be related to the rehabilitation of our nation's handicapped, it must be clearly understood that our nation cannot afford to waste manpower. Our very future as a free people depends on the intelligent utilization and conservation of our human resources. We do not enjoy an unlimited pool of this commodity and hence any comprehensive manpower plan must take rehabilitation into consideration.

Financial investments in rehabilitation yield dividends into the salvaging of human lives as well as in the saving of substantial sums of money. Not only does he become self-supporting but over a period of three years the average employed rehabilitant will pay back in federal income taxes alone the total cost of his rehabilitation. This does not take into consideration the many indirect contributions in creative effort made by the employed handicapped.

The responsibility for rehabilitation does not lie with any particular few but rather with every individual member of society. Only when the citizens accept the handicapped as an integral contributing part of their community does the process of rehabilitation reach its fruition. Any serious minded individual with these facts in hand must come to the conclusion that rehabilitation is a national resource.

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A COOPERATIVE PLAN FOR A COMMUNITY TREATMENT CENTER

FRANK T. HAZELTON, C.C.T.*

Introduction

Through the series of circumstances described in the following, there has developed in Cedar Rapids, Iowa, a cooperatively sponsored treatment center aimed at providing a limited scope of rehabilitative activities for the crippled and handicapped people of Linn County, Iowa. This program is co-sponsored by the County Chapter of the Society for Crippled Children and Adults, and the Cedar Rapids YMCA. It represents a community service program that neither agency could have sponsored by itself.

The genesis of this program came about as the result of an accumulation of Easter Seal funds above the needs of the County Society for Crippled Children and Adults in their individual case service program and a demonstrated need for rehabilitation facilities in the community. At the time the possibility of establishing a treatment facility was being considered, a professional Secretary of the YMCA was a volunteer member of the Board of Directors for the County Society for Crippled Children and Adults. During his spare time, this gentleman had started bringing handicapped children to the YMCA swimming pool for medically prescribed exercises and general recreation. Requests for this activity expanded to the point where the Secretary could not handle it, and it became necessary to procure part-time help to carry on the effort. The County Easter Seal Society agreed to furnish the funds to provide this additional help. As a result, physical education students from Coe College in Cedar Rapids, and the State University of Iowa were hired to supervise the program. This initial effort pointed out the need for a permanent, more adequately supervised treatment program for the crippled and handicapped in the community. A survey of available locations in the community was made, and the YMCA was chosen because of its central location and the nature of its available space. The funds for development were limited at this time to around $10,000.

Therapy Pool

After extensive consultation with local physicians, it was decided that a warm water swimming pool would be the first item of equipment installed. Construction of this pool in the YMCA Building was started in November, 1953 and completed in March, 1954. Adjacent areas were remodeled to provide an office, waiting room, and locker and shower room. Materials and construction were contributed at nearly cost by the participating companies. The facility is located on the ground floor of the building in what used to be the old boiler room and coal bins. Entrance from the street level is completely ramped with wide doors that will accommodate any type of device of ambulation or support. The pool is in the shape of a T, with the longest section being 21 feet. It has three depths of two, three and four feet, respectively. The floor of the pool is completely flat in each section, with vertical steps between the sections. Railings are provided along the sides of the pool to assist patients in supporting themselves. The long section of the pool consists of three foot depths at each end, with the four foot depth in the middle. The stem of the T consists entirely of a two foot depth. With this arrangement, the longest portion of the pool may be used for swimming and recreational activities. The pool is also equipped with one basketball goal at a height of eight and one-half feet above the main section of the pool. The pool is connected directly to the # three filter of the circulation system of the main YMCA pool. Valves are arranged to close the circulation system of the therapy pool in order that the volume of heated water stays intact within the therapy pool. The pool is heated by blowing live steam directly into the return line of the circulation system. After considerable trial and evaluation of water temperature, a range of 92° to 95° F. was judged to be warm enough to permit adequate comfort and relaxation for most patients, and still cool enough to permit an extensive period of rather vigorous activity without undue fatigue.

This pool was opened for use in March, 1954, but sufficient funds were not available immediately to hire a therapist to develop the program. Activities in the pool were carried on under medical prescription; supervision of the YMCA physical director; and by physical education students from Coe College and the State University of Iowa. A therapist in the person of

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this author was hired in September, 1954, to direct and develop the program of the Center.

Corrective Gymnasium

The immediate apparent need was for a corrective gymnasium. The Junior League of Cedar Rapids was contacted with respect to this need, and they agreed to provide the sum of $3500.00 to cover the cost of remodeling additional space to provide a gymnasium. Work was begun on this area in December, 1955 and completed in March, 1956. The gymnasium is immediately adjacent to the pool and other facilities, and is a rectangular room 19 x 30 feet and eight feet in height. Lavatory facilities were also added at this time. The gymnasium was equipped and put into full program use in April, 1956. Special corrective exercise equipment has been procured and installed as funds became available. There are no plans at this time for further expansion of the physical plant.

Administration

Because the space was provided by one agency, and the construction and program financing by another, special problems of administration were involved. To clarify the role of these agencies, a memorandum of agreement was drawn up in February, 1954 between the two organizations to establish administrative responsibility and procedures. The provisions of this memorandum agreement are as follows:

1. It is the declared purpose and intent that the sole program of the treatment center is to be in the nature of recreation and general body building in an atmosphere of Christian Fellowship, with emphasis on individualized instruction to the individual or parent in muscle contraction or relaxation to improve muscular function of handicapped children and adults.

2. It is agreed that in no event will the treatment center encroach upon the professional aspect of individual cases such as indulging in definitive individualized, concentrated physical therapy, the use of diathermy, Infra-red, Electrical Stimulators, Whirlpools, or hot packing mechanisms, or types of professional treatment or use of equipment ordinarily offered by the medical profession or properly constituted hospital departments.

3. The Association and the Society will at all times jointly solicit the cooperation of the Linn County Medical Society in the management, control and operation of the treatment center.

4. The treatment center will be under the control and direction of a Board of Control consisting of three members; One member appointed by the Board of Directors of the Association; One member appointed by the Board of Directors of the Society; And one member appointed by the Linn County Medical Society. Said members to act for a period of one year or until their successors are duly appointed, and the member appointed by the Board of Directors of the Association shall act as Chairman. (Author's Note: These members have always been physicians.)

5. If a Director is employed for the treatment center by the Board in Charge of same (subject to the approval of the Boards of the Association and Society), it is agreed that said Director will be under the direct control of the Association and included as a member of its professional staff with primary duties concerned with the operation of the treatment center, with the right of the Association, however, to use his services for other Association activities to the extent of approximately 300 hours per year.

6. The salary of the Director is to be paid by the Association, which said salary so paid shall be reimbursed to the Association by the Society either on a monthly, quarterly or annual basis as they may agree.

7. The Society agrees to reimburse the Association for the cost of professional legal liability insurance with such limits as may be determined by the Association Board, with the understanding that if feasible, both the Society and Association will become joint assureds.

8. The Society waives any right or claim it may now have or in the future have against the Association for money spent on the treatment center located on the Association Property.

This briefly outlines the main provisions of the memorandum agreement between the two organizations pertaining to the administration and supervision of the treatment center. There are currently four members of the Board of Control, with the additional member being appointed by the County Medical Society. Members of this Board do on occasion serve as consultants on individual cases. It is a policy in the operation of the treatment center that all patients must have the prescription of their family physicians. The present director of the Center also has additional responsibility as Executive Director of the County Society for Crippled Children and Adults with all the miscellaneous duties that go with such responsibility.

Aims and Objectives

With the establishment of the above described facility and administrative procedures, the next step in evolution was the development of a program philosophy. Shortly after the arrival of the present director, the following aims and objectives were formulated and accepted by the boards and committees involved, as a basis of program planning and growth:

Aim I To provide for the people of Linn County, Iowa, a treatment center commensurate with their collective needs.

Objective A To ameliorate the physical handicap of any person referred to the treatment center.

Objective B Provision of planned and supervised group activities to stimulate the individual socialization of the handicapped.

Objective C To make a centralized recreational facility available to the handicapped of Linn County, Iowa.

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[1]Excerpts from the Memorandum Agreement between the Cedar Rapids, Iowa YMCA, and the Linn County, Iowa, Society for Crippled Children and Adults.

Objective D To assist the handicapped of Linn County, Iowa in a vocational rehabilitation program commensurate with their individual needs.

Objective E To train each handicapped individual referred to this service in the activities of daily living in order to assist him to become as self-sufficient as possible in his home and community.

Objective F To provide each individual referred to this service with the opportunity to learn one or more avocational skills that may serve him as a leisure time activity.

Objective G To conduct this treatment program in a non-denominational Christian atmosphere permissive to the spiritual growth of the individual concerned.

Aim II To provide for the people of Linn County, Iowa a central source of information regarding rehabilitation needs and procedures.

Objective A Public education programs regarding the needs of the handicapped and how they can or are being met.

Objective B To maintain current files of rehabilitation materials to be made available to the public.

Objective C Development of a limited reference library in the field of human rehabilitation.

Aim III To establish and maintain a clearing center for used orthopedic devices of ambulation and support.

Objective A To establish such a service by seeking the individual contribution of such devices, and purchasing them as needed when not otherwise available.

Objective B To distribute this equipment on a loan basis upon the advise and prescription of the family physician, and the case service committee of the Society.

The measure of success of any program is how well it accomplishes its objectives. During the three years of existence of this directed program, more than 200 different cases have been handled at the Center, representing approximately 20 different types of handicapping conditions. As would be expected, the success in any individual case rests first of all with the motivation of the individual. Success with some cases has been most satisfactory and with others, disappointing, but as one local orthopedic surgeon recently stated, "I am becoming more and more conscious of the impact of this program upon this community."[2] Acceptance by the medical profession is indicated by the fact that about 35% of the physicians in this community have referred patients to the center. Rapport with the medical profession has been excellent.

The program of the center is conducted on an out-patient basis only, and on a basis of one to five visits per week by each patient at the doctor's discretion. All activities are carried out under the physician's prescription and altered through physician-therapist consultation.

Staff

The staff at the center consists of a corrective therapist in the person of this author and a part-time assistant (at present, a registered nurse whom we have trained in the exercise procedures used at the center.) Previous assistants have all been graduate students in physical education from the State University of Iowa. As soon as funds become available, another full-time therapist will be added to the staff. A decision has not been reached as to whether this new staff member will be a corrective or physical therapist.

The public education and equipment loan efforts have both been very successful. Educational materials are combined with the Easter Seal Campaign each year, along with a year-round program of lectures and other presentations to local groups. Special programs and discussions have been conducted for visiting persons from several foreign countries who have been interested in the community services projects in this country. Currently about twenty pieces of specialized equipment are in use, on loan from the equipment pool.

Implications

The implications of this limited treatment center are numerous. In its incorporation as part of a YMCA program, it has received rather widespread publicity. There are approximately 1800 YMCA's in this country, many of which are large enough to accommodate a program of this nature. It is felt that with the program philosophy developed in this effort, it has a justification as a YMCA program effort. It further exemplifies the cooperation of several community service organizations in a pooling of resources to meet a specific need. This need, and the effort here in Cedar Rapids has been called by Dr. John E. Davis, "The grass roots of rehabilitation."[3] Funds and facili-

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[2]Excerpt from personal correspondence with Dr. John Robb, an Orthopedic Surgeon in Cedar Rapids, Iowa, and former member of the Board of Directors of the Linn County, Iowa, Society for Crippled Children and Adults.

[3]Excerpt from personal correspondence with John E. Davis, Sc.D., during the time he was Chief of Corrective Therapy, Dept. of Physical Medicine and Rehabilitation, Veterans Administration Central Office, Washington, D. C.

STUDIES IN CLINICAL PHYSIOLOGY OF EXERCISE

I. CONGENITAL ABSENCE OF PECTORAL MUSCLE IN ATHLETES

ERNST JOKL, M.D.*

A century ago the French physiologist Duchenne[1] noticed that in man under normal conditions there is no such thing as contraction of a single muscle! Motor objectives, he wrote, are attained invariably by innervation of several muscles or portions thereof. Similarly, the English neurologist Hughlings Jackson[2] came to the conclusion that "the cerebral cortex of man does not concern itself with individual muscles but wth the completion of motor tasks." More recently, E. D. Adrian[3] has stated the issue more comprehensively as follows:

> The nervous system reacts to relations between stimuli and performs the appropriate task with any part of the motor system that is available. We cannot represent it as a series of machines for operation on the map of events unless we add a number of devices to make good this fundamental difference. On the sensory side there must be something to abstract the significant elements of a pattern; and on the motor side something to do just the reverse, to convert the abstraction into a concrete movement.

The importance of the neurological principle as outlined above is demonstrated by three case histories of successful athletes with congenital absence of the pectoral muscle. Two authoritative reports on the anatomical aspects of the subject are available in the literature, one in French by le Double[4] and the other in German by R. Bing.[5] Table 1, which summarizes the relative frequency of involvement of the different muscles, also indicates that the pectoral is most commonly affected.

In Fig. 1 an excellent long distance runner is depicted. In his case the left triceps is also absent so that extension of the lower arm against gravity is impossible. This latter muscle defect is a great rarity.

In the second man (Fig.3), who is a champion shot putter, abnormalities of pigmentation of the skin, of hair growth and of distribution of sweat glands, all localized in the afflicted pectoral region, are associated with the congenital muscle defect. The inferior portion of the pectoral muscle only is missing in the third man (Fig. 4) who attained fame as a pole vaulter.[6]

The human nervous system operates on the principle of sending out impulses to groups of muscles

Frequency of Muscle Defect or Absence. (185 Cases)	
Pectoralis	102
Trapezius	18
Serratus ant. long.	14
Quadratus femoris	16
Omohhyoideus	8
Semimembranosus	7
Brachioradialis	4
Gemelli	4
Deltoideus	4
Latissimus	4
Sternocleidomastoideus	3
Rhomboidei	3
Supra & Infraspinati	3
Biceps Brachii	3
Hand Muscles	2
Quadriceps Femoris	2
Platysma	2
Extensor carpi ulnaris	2
Longissimus dorsi	1
Supinator longus	1
Levator Scapulae	1
Intercostales	1
Facial Muscles	1
Gastrocnemius	1
Subclavius	1
Triceps brachii	1
Brachialis int.	1
Glutei	1
Extensor digit. prop.	1
Flexor Digit. Subl.	1
Stylohyoideus	1

Table 1

*University of Kentucky, Lexington.

[1]E. Jokl, *The Clinical Physiology of Physical Fitness and Rehabilitation*. Chas. C. Thomas, 1958.

[2]Huhlings Jackson, *Selected Writings*. London, Hodder and Stoughton, 1932.

[3]E. D. Adrian, *The Physiological Background of Perception*. London, Oxford, 1947.

[4]A. F. Le Double, *Traite des Variations du Systeme Musculaire de L'Homme*. Paris, Schleicher, 1897.

[5]R. Bing, Uber angeborene Muskeldefekte. *Virchows Archiv*, 170, 1902.

[6]E. Jokl, "Congenital Absence of Pectoral Muscle," *Brit. Med. Jrnl.* June 3, 1939.

[7]E. Jokl *et al.*, "Neuromuscular Performance and Sensory Receptivity in a Triple Congenital Amputee," *J.A.M.A.*, June 2, 1956.

[8]F. J. Buytendijk, "Femininity and Existential Psychology," in *Perspectives in Personality Theory*. Basic Books 1957.

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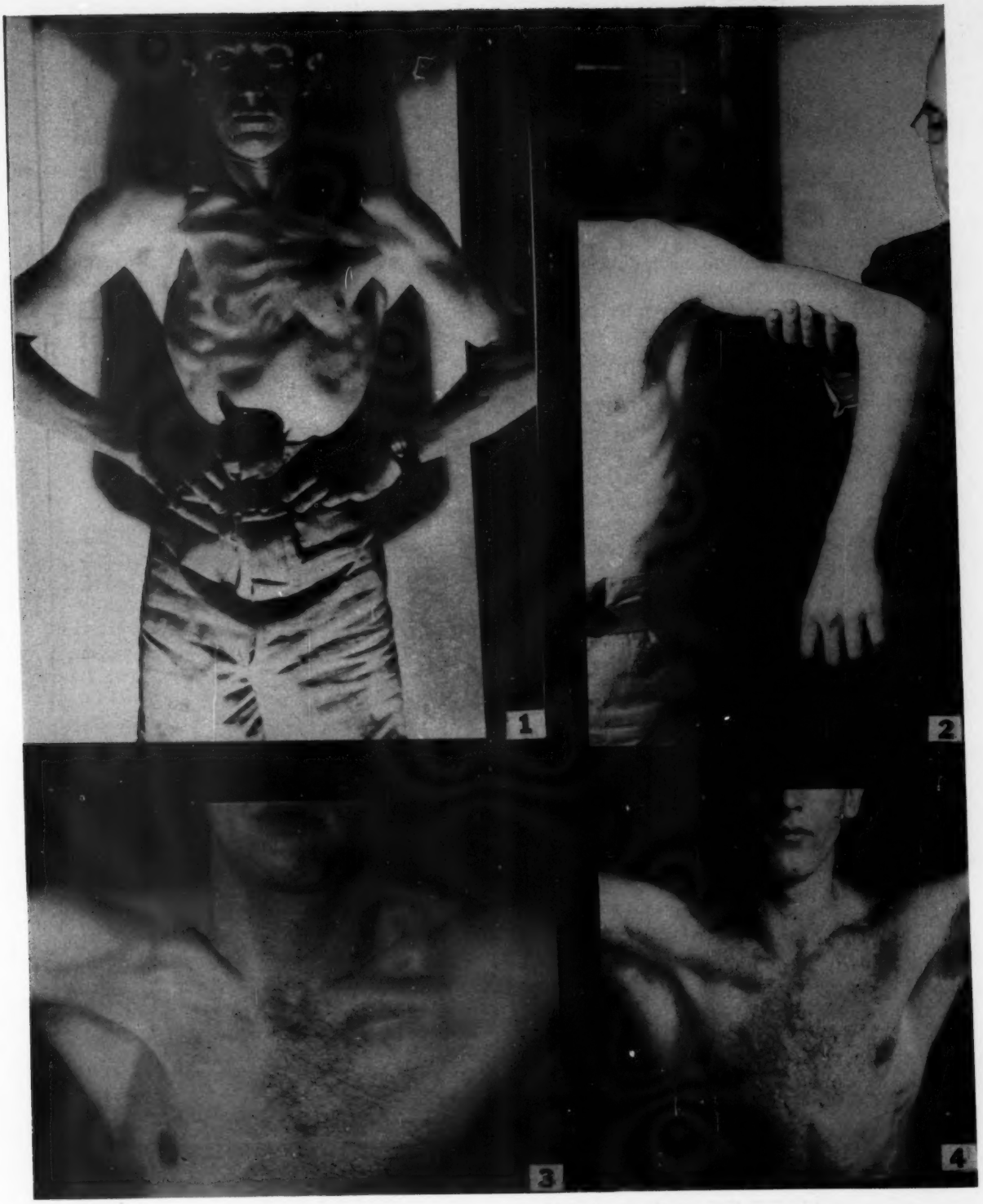
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A PROPOSED OUTLINE OF A CURRICULUM FOR STUDENT TRAINEES IN CORRECTIVE THERAPY

ISRAEL MUSS, M.D.*

EARL W. MASON, C.C.T.**

The Veterans Administration has recently tried to emphasize student trainee programs in the paramedical fields of physical, corrective and occupational therapy in an attempt to recruit more and better trained personnel. Recent VA bulletins offer college students, at a graduate level, opportunities for a 250-hour training course in each of these three therapies by affiliation between Veterans Administration hospitals and accredited colleges.

The following outline is a suggested curriculum in corrective therapy as submitted to an accredited college with intentions to affiliate. This program was conceived and generally executed in the general medical and surgical situation of the Veterans Administration Hospital at Louisville, Ky.:

I. Orientation to the Corrective Therapy Program

1. Inspection and discussion of corrective therapy facilities
2. Outline of units involved and general program
3. Anatomy stressed in corrective therapy treatment
4. Physiology of exercise for hospitalized patients
5. Outline of scope and areas of corrective therapy
6. Terminology in corrective therapy and related hospital fields

II. Remedial Exercise Techniques

1. Four classifications of exercise
   a. Passive
   b. Assistive
   c. Active
   d. Resistive
2. Bed patient activities
   The Medical Patient
   a. Approach to and orientation of patient
   b. Psychological encouragement and motivation
   c. Self-care activities
   The Surgical Patient
   a. Pre-operative exercises
   b. Post-operative exercises
   c. General reconditioning exercises
   d. Proper positioning during recovery
3. Specific exercise procedure
   a. Cardiac exercises
   b. Kabat-Kaiser exercises
   c. DeLorme exercises
   d. Williams exercises
   e. Marie-Strumpell arthritis exercises
   f. Magnus reflex exercises
   g. Temple Fay exercises
   h. Codman's exercises
   i. Frenkel's exercises
   j. Mat exercises
   k. Buerger-Allen exercises
4. Apparatus exercise techniques
   a. Pulley exercises for neurological patients
   b. Exercise machines
   c. Dumbbell exercises
   d. Boot weight exercises
   e. Weight lifting and moving
   f. Powder board, suspension and skate exercises
   g. Wheelchair exercises
5. Resistive exercise techniques
   a. Moderate resistive
   b. Progressive resistive
   c. Brief maximal resistive
6. Specific exercise techniques
   a. Coordination exercises
   b. Non-gravity exercises
   c. Synergistic exercises
   d. Reciprocal exercises
   e. Reinforcement exercises
   f. Mass movement exercises
   g. Isotonic and isometric exercises
   h. Breathing exercises
      1. Deep breathing
      2. Diaphragmatic breathing
      3. Segmental breathing
      4. Rhythmic breathing
      5. Postural drainage
   i. Muscle stretching in contracture deformities
   j. Postural alignment and exercises

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**Chief, Corrective Therapy, Veterans Administration Hospital, Louisville, Ky.

1. General and specific postural alignment
2. Specific exercises for strengthening weak musculature
3. Specific exercises for correction of existing deviations or deformities

III. Progressive Ambulation

1. Early ambulation techniques
   a. Preliminary bed techniques
   b. Wheelchair
   c. Moving to bedside chair and back to bed
   d. Moving to wheelchair and maneuvering it
   e. Limited walking about the ward
2. Graduated ambulation
   a. Use of ambulator in preparation for ambulation
   b. Standing and balancing in parallel bars
   c. Walking in parallel bars
   d. Walking with invalid walker
   e. Walking without aid
3. Crutch training
   a. Specific exercises preparing for crutch walking
   b. Deciding type of crutches to be used
   c. Adjustment of crutches
   d. Instruction in various crutch gaits
   e. Climbing stairs and inclines
   f. Arising from sitting
   g. Getting into bed and back to erect position
   h. Falling to the floor, resuming erect position and retrieving crutches
   i. Getting into and out of a vehicle
4. Amputee training in ambulation
   a. Instruction in care of stump and stump sox
   b. Stump toughening procedure
   c. Development of specific musculature for maximum use of prosthesis
   d. Initial check of fit and functional use of prosthesis
   e. Gait training before mirror and re-education of walk
   f. Final check of fit and functional use of prosthesis
   g. Recheck after one month for fit and gait habit

IV. Blind Training

1. Psychological aspect of blindness and the therapist
2. Instruction in self-care
3. Instruction for eating procedures
4. Instruction in exercises and activities; hygiene conducive to health maintenance
5. Instruction in use of cane
6. Instruction in foot travel and orientation to hospital (buildings and grounds)
7. Instruction in activities for daily living and care of living quarters
8. Instruction designed to obtain maximum use of remaining faculties
9. Advise benefits to be gained through use of devices
   a. Records
   b. Typewriters
   c. Wrist watches
   d. Braille
   e. Societies for the blind
   f. Gait resources

V. Re-education of Gait

1. Explanation of phases and muscles
2. Maintenance of proper walking posture
3. Instruction in proper functional alignment of body when walking
4. Balancing exercises and procedures
5. Coordination in walking
6. Strengthening of weakened musculature
7. Development of endurance
8. Instruction in proper functional use of arms and legs in developing gait
   a. Movement of hips and knees
   b. Synchronization
   c. Forward movement of lower trunk
   d. Positioning of feet
   e. Positioning of legs
   f. Length of stride

VI. Activities for Daily Living

1. Self-care activities
   a. Charts available for various disabilities
2. ADL charts
3. Activities for paraplegics and hemiplegics
   a. Wheelchair exercises
   b. Mat exercises
   c. Heavy resistive exercises
   d. Moving self from place to place in bed
   e. Moving from bed to chair and chair to bed
   f. Moving to toilet seat and return
   g. Moving to bath tub and return
   h. Put on and take off clothes
   i. Put on and take off braces
   j. Rise to erect position from chair and return
   k. Fall to floor and regain erect position
   l. Get into and out of vehicle

VII. Neuropsychiatric Treatment Program

1. Acute psychotic including approach
2. Orientation to facilities and general program
3. Discussion of mental illness and types
4. The geriatric and chronic illness program

a. Objectives
b. Activities

5. The locked ward program
   a. Objectives
   b. Activities
6. The privileged patient program
   a. Objectives
   b. Activities
7. Activities offered NP patients
   a. Free exercise program
   b. Informal activities
   c. Calisthenics
   d. Formal mat exercises
   e. Games and sports of low organization
   f. Games and sports drills
   g. Modified games and sports
   h. Selected games and sports
   i. Hydrogymnastics and swim therapy
   j. Progressive relaxation instruction
8. Individual vs group techniques
9. Progressive relaxation instruction

VIII. Progressive Relaxation Program

1. Objectives of relaxation
2. Testing for pronounced tension
3. Instruction in relaxation procedure
4. Exercises to accentuate awareness of tension
5. Individual vs group techniques
6. Types of relaxation techniques
   a. Suspension slings
   b. Relaxation room
   c. Hydrotherapy and swimming pool

IX. Interpretation of Diagnosis, Prescription and Writing of Progress Notes

1. Relation of medical diagnosis to exercise and activities applied
2. Doctor's prescription
   a. Scope of therapist in carrying out prescription
3. Steps to be followed in writing progress notes
4. Facets for evaluation of patient
5. Summary of progress and evaluation of patient status

X. Tests and Measurements in Corrective Therapy

1. Voluntary muscle strength test
2. Grip measurement
3. Measuring muscle girth
4. Measuring chest expansion
5. Measurement of range of motion
6. Measuring length of extremities
7. Endurance tests
8. Measuring blood pressure
9. Taking pulse rate
10. Taking respiration rate
11. Devising tests to measure or evaluate specific disabilities
12. Observation of deviations from normal

TRIAL VISIT RATE INCREASES IN VA

An increasing number of veterans hospitalized by Veterans Administration for severe mental illness are recovering and leaving the hospital, figures released by the agency show. VA said its hospitals placed 6,736 mental patients on trial visit to their home communities during the first six months of fiscal year 1958, and 13,200 during the entire fiscal year 1957.

The fiscal 1957 number represents a seven percent increase over the 12,351 patients placed on trial visit from VA hospitals in fiscal 1956, a 32 percent increase over the 9,985 in fiscal 1955, and a 73 percent increase over the 7,617 in fiscal 1953. Most of the patients leaving the hospitals on trial visit have been treated for severe mental conditions, VA said.

The average daily patient load of mentally ill veterans in VA hospitals has remained at around the same number since the beginning of fiscal year 1956, but rose between 1953 and 1956. Currently, the figure is 57,423, which includes 52,456 veterans with severe mental illness and 4,967 with less severe psychiatric disorders.

VA said the increase in patients on trial visit can be attributed to changes in therapies (including introduction of tranquilizing drugs and more emphasis on individual and group psychotherapy), to an increase in open wards, and to reawakened interest in development of new habits of resocialization to prepare patients for return to community living.

VA HAS 3-YEAR DECREASE IN TB PATIENT LOAD

A 16 percent decrease in the average daily number of tuberculosis patients in Veterans Administration hospitals since 1954 has been reported by the agency.

VA said the daily average dropped from 15,221 in fiscal year 1954 to 12,715 in fiscal year 1957, although the number of admissions and discharges of TB patients over the same period remained the same.

Dr. Roy A. Walford, VA deputy chief medical director in Washington, D. C., said the average daily decrease resulted from a reduction of length of stay due to drug treatment pioneered by VA research plus a VA program that permits TB patients to return home while they are under drug therapy.

He said while the average period of TB drug treatment is 18 to 24 months, many TB patients can leave the hospitals after eight or nine months, provided they continue to receive adequate medical supervision.

To prevent holding patients in the hospital when they require only occasional observation or treatment, a program called "completion of bed-occupancy care" has been developed by VA over the years, Dr. Wolford said.

Under this program, certain TB patients may leave the hospital and return for completion of treatment, particularly in areas where community resources for follow-up care are inadequate, he said.

Dr. Wolford said this form of completion of hospital treatment also is used for psychiatric patients on trial visit to their communities, for cancer patients and for others with long-term illnesses.

INDICES OF BODY BUILD OF UNITED STATES FREE STYLE WRESTLERS*

PHILIP J. RASCH, Ph.D., F.A.C.S.M.

The relationship of physical type to motor performance has been a matter of interest since man's earliest days.[1] While it is generally agreed that body build is related to performance,[2,3,4,5] authorities have been unable to define this relationship in any meaningful way. Nevertheless, the apparent connection between structure and function is of particular interest to corrective therapists, and its implications for the field of physical education in general have been pointed out by Zeigler.[6] In view of the extremely vigorous nature of amateur wrestling, it was reasoned that a study of the body build of wrestlers who attained the championship level might throw some light on this question.

Kohlrausch[7] and Arnold[8] described Olympic wrestlers as massive types similar to weight throwers and weight lifters. Boardman[3] observed that the physical characteristics of wrestlers resemble football guards and weight lifters in that they have short necks, powerful shoulders, wide trunks, short legs, massive muscles and great muscular strength. The somatotype of such an individual might approximate 361 or 471. However, these descriptions are not characteristic of the Olympic Free Style wrestlers observed by the writer at the 1932 Olympic Games in Los Angeles, nor of the United States intercollegiate wrestling champions known to him before and since that time. Kroll[9], who studied a group of Big Ten college wrestlers, reported that their somatotype "tended to be that of an agility athlete," with very dense tissues and an ectomorphic-mesomorph rating of 354.

A tournament held April 29 to May 2, 1956, at Hollywood, California, to select the United States Olympic wrestling team afforded an opportunity for further study of the characteristic body build of highly trained wrestlers. However, conditions did not permit the investigator to somatotype the contestants nor to take detailed measurements such as Tappen[10] obtained in his research on champion weight lifters. The only feasible method of objectively evaluating the body build of these highly trained young athletes was the utilization of indices of body build, despite their rather severe limitations. Although body build cannot be assessed satisfactorily by these indices, they afford a limited means for comparing individuals or groups and avoid the semantic difficulties recently denounced by the editor of the *Journal of the American Medical Association*.[11]

Review of the Literature

In surveying the literature on nutritional status, proportion, and body type several years ago, Krogman[12] found that many indices had been proposed, a few of which have been generally accepted and widely utilized. Only indices of this type were considered in this study.

McCloy[13] suggested that Livi's ponderal index:

$$P.I. = \sqrt[3]{Weight/Height}$$

was the most useful under limitations of time and

[1]Wilton Marion Krogman, "The Historical Aspect of the Study of Human Constitutional Types," *Ciba Symposia*, 3:1053-1035, December, 1941.

[2]D. A. Sargent, "The Physical Characteristics of the Athlete," *Scribners*, 2:541-561, November, 1887.

[3]Robert Boardman, "World's Champions Run to Types," *Journal of Health and Physical Education*, 4:32 *et seq.*, May, 1933.

[4]W. Montague Cobb, "Race and Runners," *Journal of Health and Physical Education*, 7:3 *et seq.*, January, 1936.

[5]Laurence E. Morehouse and Philip J. Rasch, *Scientific Basis of Athletic Training* (Philadelphia: W. B. Saunders Company, In Press), Chapter II.

[6]Earle F. Zeigler, "Implications of the Study of Body Types for Physical Education," *Journal of the Association for Health, Physical Education and Recreation*, 19:241 *et seq.*, April, 1948.

[7]W. Kohlrausch, "Zusammenlagne von Korpenform und Leistung—Ergebruise der Anthropoinetrischen Messungen and der Athleten der Amsterdamer Olympiade, 1929." Cited by Thomas Kirk Cureton, Jr., *et al.*, in *Physical Fitness Appraisal and Guidance* (St. Louis: C. V. Mosby Company, 1947), p. 95.

[8]A. Arnold, "Korperent Kicklung und Leibesubungen fur Schul und Sportarzte," 1931. Cited by Cureton *et al.*, *Ibid.*, p. 98.

[9]Walter Kroll, "An Anthropometical Study of Some Big Ten Varsity Wrestlers," *Research Quarterly*, 25:307-312, October, 1954.

[10]N. C. Tappan, "An Anthropometric and Constitutional Study of Championship Weight Lifters," *American Journal of Physical Anthropology*, 8:49-64, March, 1950.

[11]Physical Types, Editorial, *Journal of the American Medical Association*, 164:770-771, June 15, 1957.

[12]W. M. Krogman, "Growth of Man," *Tabulae Biologicae*, 20:5-16, 1941.

[13]Charles H. McCloy, *Appraising Physical Status. The Selection of Measurements* (University of Iowa Studies in Child Welfare, Vol. XII. Iowa City: University of Iowa, 1936).

*Report No. 14-57 The Research Center, Los Angeles County Osteopathic Hospital, Los Angeles, California.

economy. This formula is based on the rationale that weight is a measure of volume, and that volume increases according to the cube of the linear dimension. Since the index of build is expressed in terms of cross-sectional growth relative to linear growth, the cross-sectional growth is divided by the linear growth. The ponderal index, though not a strong factor in motor ability, has consistently low intercorrelations with other factors and, therefore, can add to the predictive value of a test battery.[14]

Jorgensen and Hatlestad[15] agreed that the ponderal index was the best single formula for determining the general body build of man. Employing measurements of college age groups as a basis, they prepared a table of T-scale scores.

Sheldon, Stevens and Tucker[16] utilized the reciprocal of the ponderal index:

$$\text{R.P.I.} = \text{Height}/\sqrt[3]{\text{Weight}}$$

They reasoned that if the body were of constant density, the cube root of the weight would yield a value proportional to the length of the side of a cube equal to the body in volume. Division of this value into the height of an individual may be regarded as division of a length by a length to yield a dimensionless ratio multiplied by a constant. They observed that the reciprocal ponderal index for the least ponderous type of young men was about 14.8, the mean being approximately 13, and for the most ponderous type, about 11.2. The higher the index, the more linear the physique; the lower the index, the more lateral and stocky the physique.

Cureton[17] employed the reciprocal ponderal index in a comparative study of the body build of Olympic athletes and national champions with non-athletes. He reported the following mean indices:

1685 Yale University students	13.19
27 Track and field champions	13.09
804 Springfield College students (Physical education school)	12.86
4 Diving champions	12.75
21 Swimming champions	12.66
15 Danish gymnasts	12.43

Kroll[9] reported the mean reciprocal ponderal index of the Big Ten wrestlers whom he had studied to be 12.867.

In a factorial analysis of eighteen variables in body build, Rees and Eysenck[18] concluded that two main factors were involved: over-all size and type, according to whether growth had been chiefly linear or lateral. Representing these two factors by stature and transverse chest diameter, they derived the following formula for the Index of Body Build:

$$\text{I.B.} = \frac{\text{Stature X 100}}{\text{6 X Transverse Chest Diameter}}$$

They suggested that subjects be classified on the basis of whether they were more than one standard deviation above the mean (leptomorphs), within one standard deviation of the mean (mesomorphs) or more than one standard deviation below the mean (eurymorphs). The mean index for a group of British soldiers was 100 and the standard deviation, 5.82. Kroll[7] reported a mean index of 103.64 for a group of Big Ten college wrestlers, and Cureton[18] reported means of 93.72 for twenty-six Olympic swimmers and 93.6 for twenty-five track and field athletes.

Parnell[19] determined the Index of Body Build on 3,000 students who had been somatotyped and found a mean of 107.03 for 344 Oxford students; however, this mean index did not distinguish between the various somatotypes. The mean Index of Body Build for twenty-three competitors in a Mr. Universe contest was 95.5.

Weisman[20] revived interest in the Scammon and Rucker[21] thoracic index:

$$\text{T.I.} = \frac{\text{Anteroposterior diameter of the thorax}}{\text{Transverse diameter of the thorax}} \text{X } 1000$$

In utilizing this formula in a study of track and field competitors in the National Collegiate Athletic Association, he reported that the mean thoracic index for athletes at the 1940 meet was 677, and at the 1949 meet, 667. He concluded that these indices indicated that the competitors had flat, wide chests. In Weisman's opinion, a flat chest is associated with an increase in the size of the heart, which, in turn, correlates with athletic performance.

Seltzer[22] noted that oxygen consumption at rest and during moderate work was higher for persons

[14]Elizabeth Powell, "The Present Status of Physical Indices," *Research Quarterly*, 11:3-17, May, 1940.

[15]N. M. Jorgensen and S. Lucille Hatlestad, "The Determination and Measurement of Body Build in Men and Women College Students," *Research Quarterly*, 11:60-77, December, 1940.

[16]W. H. Sheldon, S. S. Stevens and W. B. Tucker, *The Varieties of Human Physique* (New York: Harper and Brothers, 1940).

[17]Thomas Kirk Cureton Jr., *et al.*, *Physical Fitness of Champion Athletes* (Urbana: University of Illinois Press, 1951), pp. 22-23.

[18]W. Linford Rees and H. J. Eysenck, "A Factorial Study of Some Morphological and Psychological Aspects of Human Constitution," *Journal of Mental Science*, 91:8-21, January, 1945.

[19]R. W. Parnell, "The Rees-Eysenck Body Index of Individual Somatotypes," *Journal of Mental Science*, 103:209-213, January, 1957.

[20]S. A. Weisman, "Track Stars Are Not Barrel Chested," *Journal Lancet*, 73:280-282, July, 1953.

[21]Richard E. Scammon and William H. Rucker, "Changes in the Form and Dimensions of the Chest at Birth and in the Neonatal Period," *American Journal of Diseases of Children*, 21:552-564, June, 1921.

Indices of Body Build of Candidates for 1956 United States Olympic Free Style Wrestling Team

Body Weight Class	No. Subjects	Ponderal Index	T-Scale Score	Reciprocal Ponderal Index	Index of Body Build	Thoracic Index	Somatotype*				
114.5 Pounds											
Mean	6	230	49.7	13.2	101.8	656	253	343	433	444	
Champion		225	43.8	13.2	98.3	607					
125.5 Pounds											
Mean	11	232	53.0	13.0	101.1	729	252	263	353	523	534
Champion		——	——	——	——	——					
136.5 Pounds											
Mean	10	233	54.8	12.9	97.3	664	162	442	453	533	
Champion		236	58.9	12.7	88.0	682	172	452	532	543	
147.5 Pounds											
Mean	10	235	56.5	12.9	101.5	684	162	442	453	533	
Champion		238	61.0	12.7	94.5	650	172	452	532	543	
160.5 Pounds											
Mean	9	239	60.9	12.6	100.5	703	261	451	362	613	
Champion		229	50.0	13.2	103.3	678	253	343	433	444	
174.5 Pounds											
Mean	11	237	54.6	12.8	100.1	707	262	352	522		
Champion		231	52.8	13.1	103.0	717	163	443	354	524	
191 Pounds											
Mean	5	241	63.8	12.5	95.5	714	171	612	623		
Champion		235	57.8	12.8	101.0	661	262	352	522		
Heavyweight											
Mean	8	252	71.6	11.9	98.1	757	——				
Champion		272	——	11.1	89.4	732	——				
Group											
Mean	70	237	59.9**	12.7	99.7	691	172	452	532	543	
Champion											
Mean***	7	238	54.0**	12.7	96.8	672	——				

*From Table 23 in Sheldon
**Less heavyweight champion
***Less 125.5 pound champion

TABLE I

with flat chests than for those with round chests. In exhausting work, the flat chested individuals displayed greater capacities for supplying oxygen to the tissues, indicative of efficient respiratory and cardiovascular mechanisms.

Research Procedures and Discussion

The pre-tournament weigh-in of the candidates for the 1956 Olympic Free Style wrestling team was held at the Hollywood American Legion Stadium on Sunday, April 28, 1956. With the athletes disrobed, the following measurements were recorded on each of seventy contestants distributed throughout eight weight classes: height, weight, anteroposterior and transverse diameters of the chest. The mean ponderal index, T-scale score, reciprocal ponderal index, Index of Body Build, and thoracic index for the contestants in each of the eight weight classes are presented in Table I. The various indices for the champion in each class, with the exception of the 124.5 pound champion, are also listed in Table I.

The ponderal index of these athletes ranged from 218 to 272, the lowest figure being equivalent to a T-scale score of 35; however, the highest T-scale score (that for the heavyweight wrestling champion) exceeded the limits of the Jorgensen-Hatlestad table, and reflected the fact that weight is a considerable advantage in the unlimited class. It was necessary for the heavyweight champion to stand with his feet on separate scales to determine his weight of 311 pounds. The mean T-scale score for the entire group, excluding the heavyweight champion, was 59.9. The mean ponderal index for the group was slightly less than one standard deviation above the mean (50) for college men. The mean T-scale score for the champions only, excluding the heavyweight contestant, was 54. Hence, the mean ponderal index for the champions was nearer the mean for male college students than was the mean ponderal index for the entire group.

[2]Carl C. Seltzer, "Body Build and Oxygen Metabolism at Rest and During Exercise," *American Journal of Physiology*, 129:1-13, April 1, 1940.

The mean reciprocal ponderal index for the group was 12.7, and the mean reciprocal ponderal index for champions alone was identical. This figure is only silghtly below the mean of 12.8 reported by Cureton for students in a physical education college and by Kroll for Big Ten wrestlers. The mean reciprocal ponderal indices for both the wrestlers and physical education students were well below the mean of 13 for unselected young men reported by Sheldon, Stevens and Tucker and indicates that the build of the athletes was more lateral and thickset.

The mean Rees-Eysenck Index of Body Build for the group was 99.7 and for the champions, 96.8. Both of these exceed the mean of 95.5 reported by Parnell for competitors in the Mr. Universe contest, are considerably above the mean reported by Cureton for Olympic swimmers and track and field athletes (93.72 and 93.6, respectively), and considerably below the mean of 103.64 reported by Kroll for Big Ten wrestlers. However, the mean Index of Body Build of the Olympic wrestlers was less than one standard deviation below the mean of 100 for the British soldiers, upon which group the test was standardized.

The mean thoracic index for the group was 691, ranging from 607 to 757. The mean thoracic index for the champions was 672, with a range of 706 to 732. These indices indicate that the wrestlers' chests were rounder than those of the track athletes studied by Weisman and, according to Seltzer's observations, suggest that the wrestlers may have had smaller hearts than the track men and, consequently, less ability to supply oxygen to the tissues. A previous study by the writer reported that the vital capacities of wrestlers are not significantly greater than those of non-athletes of similar age, height and weight.[23] Perhaps Seltzer's theory is consistent with the demands of the two types of activity; but it is possible also that the indices for the wrestlers actually reflect greater hypertrophy of the muscles covering the chest and back.

Although the body build of these athletes tended to be lateral and thickset, the tendency was no more pronounced for these wrestlers than for a group of college physical education students. According to the Rees-Eysenck Index of Body Build, the Olympic Free Style wrestlers would be classified as mesomorphs, manifesting a tendency toward a more lateral build than was characteristic of an unselected group of British soldiers, and with rounder chests than intercollegiate trackmen.

Indices of the type discussed above are, at best, only a general indication of body build; hence, it is difficult to ascribe specific meanings to them. Insofar as these criteria are concerned, the indices of body build for these highly selected young athletes differed very little from those of other young men accustomed to vigorous physical training. To describe these wrestlers as "massive types" does not seem justifiable, and this conclusion is supported by the personal observations of the writer. Although these wrestlers were well developed, few, if any, of them could be described as having "massive muscles." The Rees-Eysenck index for the individual most notable for his powerful physique was 97.1, which approximates the mean for contestants in the Mr. Universe competition. By the same criterion, the index for the winner in his body weight class was 103, which more closely approximates the mean index for Oxford men students than for competitors in the Mr. Universe contest. The data supports the conclusion that the Indices of Body Build of Olympic Free Style wrestlers are not markedly different from those of non-wrestlers of equivalent age.

[23] Philip J. Rasch and John W. A. Brant, "Measurements of Pulmonary Function in United States Free Style Wrestlers." *Research Quarterly*, 28:279-287, October, 1957.

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You May Wish To Attend

June 15-30	Annual conference, American Physical Therapy Assoc., Seattle, Wash.
June 23-27	Annual meeting, American Medical Association, San Francisco.
July 19-25	Second Tri-Organizational Conference, APMR, AART, AMRDC, Atlantic City, N. J.
Aug. 24-29	Annual meeting, American Congress of Physical Medicine, Philadelphia.
Sept. 25-28	Annual meeting, American Academy of Cerebral Palsy, Providence, R. I.
Oct. 19-24	Annual conference, American Occupational Therapy Assoc., New York.
Oct. 26-30	National assembly of the Orthopedic Appliance and Limb Manufacturers Association, The Eden Roc Hotel, Miami Beach, Fla.
Oct. 27-31	Annual meeting, American Public Health Assoc., Dallas, Texas.

A QUADRICEPS EXERCISING DEVICE FOR BELOW–KNEE AMPUTEES

DAVID S. BILOWIT, C.C.T.*

Below-knee amputees must exercise their stumps so that they can increase strength to a point equal to the task of utilizing prostheses. Most important of the muscles involved is the quadriceps group. In exercising the quadriceps of the affected leg, two major problems face us: (1) the fact that all existing cuffs or harnesses slip due to (a) the axis of the knee changing as the knee is extended or (b) tapering of the stump which makes exercise difficult to administer properly and often causes irritation to the stump; (2) the fact that there is no objective guide by which to measure the strength of the involved extremity in reference to the unaffected extremity. In addition there are several minor problems such as excessive time necessary to adjust the cuffs, close supervision to see that they are perfectly adjusted, and that there is no excessive irritation of the stump.

The device described below may be adapted to the Elgin table to increase the efficiency in exercising, testing and measuring strength of the quadriceps of the below-knee amputee.

A bracket, fabricated of aluminum, is attached to the foot of a table (Fig. 1). This has an adjustable bar (A) to which is attached a padded, partial knee "cuff" (B) shaped to fit over the stump. The cuff is made of plexiglass and padded with ¼-in. foam rubber. It is secured by two bolts fitted into slots (C) so that it can slide a distance of approximately three inches. The bottom of the bracket (D) has a point to attach the cable which holds the weight pan.

Once the bar (A) is adjusted to the proper height, the patient places his leg beneath the cuff which remains securely in one place by the pressure of the weight pulling downward and the leg pushing up as the patient attempts to extend the knee. All movement of the leg caused by the changing center of rotation of the knee joint is taken up by the movement of the cuff (B) along the bolts sliding in the slots (C). Therefore, there is no sliding or slipping of the cuff in contact with the leg, no irritation or discomfort to the patient, and no continuous adjustment of the cuff by the therapist.

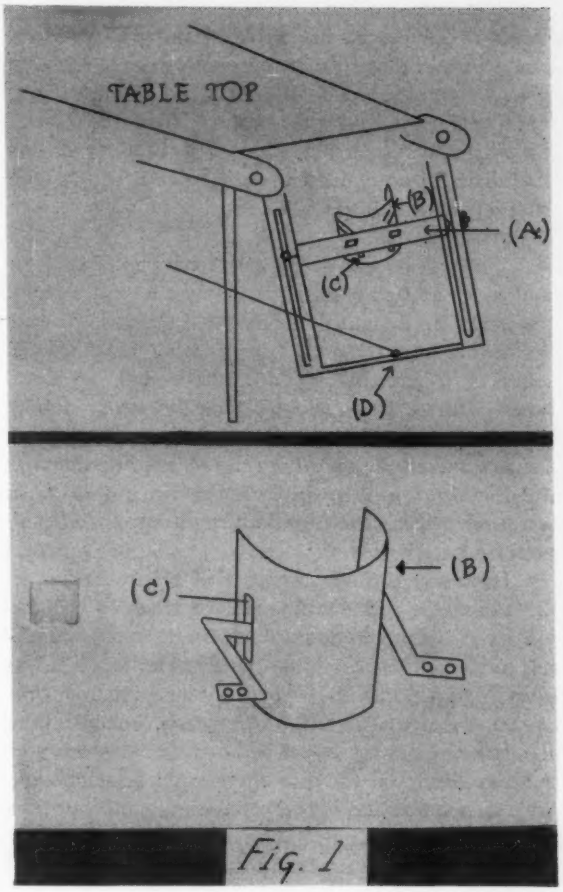

Fig. 1

Once the bar is adjusted to the correct height, the unaffected leg is slipped behind the cuff and tested, the results noted and used as a criterion for the stump, which is then slipped behind the cuff, tested and exercised. After the initial adjustment all that has to be done is to allow the patient to move slightly to one side or the other, slipping one leg out and the other in.

Summary

A method of exercising below-knee amputees to strengthen the quadriceps has been devised which is superior to previous methods in the following ways:

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'DISABILITY' AND 'HANDICAP' IN REHABILITATION

SIDNEY Z. BRENT, M.A.*

New occupational fields usually introduce new words or give more definitive meaning to words already in use. During the past twelve years, the comparatively new field of rehabilitation of the disabled has given more significant meaning to words associated with disabled persons, stressing abilities rather than inabilities. Consequently, those words which have stressed the inabilities of disabled persons are becoming obsolete.

The words "disability" and "handicap" have been and are still being used interchangeably to refer to physically and emotionally disabled persons. Webster defines "disability" as "State of being disabled; absence of competent physical, intellectual, or moral power, fitness, or the like." This dictionary defines "handicap' as "Figuratively, any disadvantage that renders success more difficult." In accordance with these definitions, the interchangeable use of these words is correct since they both imply the inability to perform successfully.

However, the advancement of rehabilitation in the treatment and management of disabled persons has given additional descriptive and distinctive meaning to the words "disability" and "handicap." "Disability," which may be temporary or permanent, is equivalent to the physician's diagnosis. For example, a fracture of the leg would be both the diagnosis and the disability, and the disability would be temporary since the expectation of complete healing and recovery is excellent. The amputation of the leg, however, would be a permanent disability since the amputation will remain forever.

"Handicap," on the other hand, is the evaluation or consequence of the disability in terms of inability to perform, which may be temporary or permanent. For example, a person with a fractured leg not able to walk, would be handicapped in walking. This handicap would be temporary since the expectation of recovery would permit him to walk as well, or almost as well, as before his accident. A person with an amputated leg without an aid such as crutches or an artificial limb would also be handicapped in walking. However, the substitution of an artificial limb for the missing leg would eliminate the walking handicap, although the disability would still exist permanently.

The distinctive but related use of these words provides rehabilitation specialists with common reference points from which all disabled persons can be evaluated for immediate goals and eventually ultimate objectives to meet their individual needs for total rehabilitation. Based on the close relationship of these two words, disabled persons can be classified into three main categories as follows:

1. Temporary disabilities with temporary handicaps, such as a person with a dislocated shoulder. The temporary disability would be "dislocation of the shoulder joint," and the temporary handicaps would include the inability to write (if the writing arm were involved), dress himself, work, and drive his car. This person would recover completely; thus his handicap would be eliminated and he would return to full performance of activities as he had prior to his accident. Accordingly, this category indicates that the first approach in rehabilitation is to eliminate or reduce the disability thereby eradicating all concomitant handicaps.

2. Corrective permanent disabilities with temporary handicaps, such as a person with an amputated leg. The permanent disability would be "amputation of leg," and the temporary handicaps would include the inability to walk. This person can be fitted with an artificial leg, which would enable him to walk as well as eliminate almost all of the handicaps resulting from the amputation. Accordingly, this category indicates that the second approach in rehabilitation is to correct the permanent disability by substitution in the form of prostheses and by reeducation (using familiar experiences), thereby eliminating or reducing concomitant handicaps.

3. Permanent disabilities with permanent handicaps, such as a person with a spinal cord injury resulting in complete paralysis from the waist down. The permanent disability would be "paralysis from the waist down," and the permanent handicaps would include the inability to walk. This person can be trained in the use of a wheelchair which would enable him to locomote himself on level ground, but he would not be able to mount steps. Accordingly, this category indicates that the third approach in rehab-

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USE OF A FIXED PROTRACTOR FOR THE MEASUREMENT OF CANES AND CRUTCHES

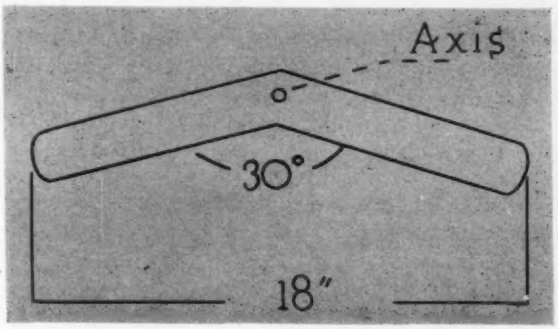
VAN DYKE GOODSELL, C.C.T.*

Many institutions use a trial and error method in the measurement of canes and crutches; e.g. the tip of the crutch is placed forward and to the side of the patient's foot, approximately four inches in each direction, and the hand grip is adjusted until the therapist feels that it is the correct fit.

In the adjustment of canes and crutches, thirty degrees of flexion of the elbow has been found to be the most efficient position. It allows the most efficient use of the triceps in the swing phase of ambulation. For many years at our hospital we have used a fixed protractor (at 30°) to measure this angle, thus eliminating trial and error, simplifying the procedure and improving service to the patient. This fixed protractor is made of 1/8-in. plexiglass and has an overall length of 18 inches at an angle of 30°. A small hole is drilled in the center.

When measuring to adjust a wooden cane to correct length, an adjustable aluminum cane is first used.

*Corrective Therapist, Veterans Administration Hospital, East Orange, N. J.



The patient stands between parallel bars, the cane in his hand with the tip placed at the proper position on the floor. The protractor is then placed with the hole over the axis of the elbow, and the patient's arm is moved to the 30° angle to coincide with the protractor.

The cane is then locked at this position and measured against the wooden cane which is then cut to proper length for the patient.

'DISABILITY' AND 'HANDICAP'

ilitation is to provide adapted appliances and retraining (using new disciplines), to reduce the degree of permanent handicaps.

Prior to 1940, the terms "crippled," "invalid," and "impaired" were used by people to describe disabled persons. These terms connoted total inability which virtually relegated disabled persons to a life of unproductivity, regardless of their abilities. However, these terms are gradually being replaced by rehabilitation specialists by the continuous application of the words "disability," and "handicap," as described above. There are some rehabilitation agencies, nevertheless, which still bear the undesirable terms of "crippled" and "impaired" in their organizational names, indicating either a reluctance to accept, or a lack of understanding of the more distinctive usage of the words "disability" and "handicap."

The introduction of new words or new meanings to commonly used words, which involve the change of strong impressions existing for many years in the minds of people, is a difficult and long term process, but sometimes a necessary one, particularly when it concerns the rehabilitation of disabled persons. Such is the case with the intrduction of the words "disability" and "handicap" to rehabilitation specialists who work with the disabled and to employers who can provide employment for the rehabilitated disabled. A definitive understanding of these words will enable people to distinguish between the disabled person's permanent disability and his ability to function independently in activities of daily living and on the job.

A. P. M. R. for Office

The nominating committee of the Association for Physical and Mental Rehabilitation, Chris Kopf, chairman, has announced the following slate of candidates for election at the meeting of the General Assembly to be held during the week of July 20 at the Ambassador Hotel in Atlantic City:

FOR FIRST VICE PRESIDENT

Karl K. Klein, Austin, Texas
Kenneth Dening, Sunmount, N. Y.

FOR SECOND VICE PRESIDENT

Samuel Burchart, Richmond, Va.
George Heos, Boston, Mass.

FOR THIRD VICE PRESIDENT

Charles E. Castle, Chillicothe, Ohio
(To be announced)

FOR SECRETARY

Lester P. Burrowes, Clinton, Miss.
(To be announced)

FOR TREASURER

Raymond B. Heaslet, Tuscaloosa, Ala.
Norman N. Tenner, Chicago, Ill.

The following thumbnail sketches have been prepared in order to acquaint the membership with the nominees:

Karl K. Klein

Has served on APMR education committee as chairman or co-chairman for past eight years; second vice president 1956-57. At present, supervisor of the program in adapted physical education and rehabilitation at Univ. of Texas . . . Previously served in the U. S. Navy rehab program during WW II and was assistant professor and advisor to rehabilitation students at Ithaca College for five years . . . The author of many articles on reconditioning and athletic training, he is a Fellow of the American College of Sports Medicine as well as APMR.

Kenneth Dening

Holds the B.S. and M. Ed. degrees from Springfield College . . .After a 3½ year stint in the Army during WW II, he entered CT in 1946 at the Cushing VAH in Framingham, Mass. . . . Has since served as chief CT at Brockton and as PMR coordinator at Sunmount (N. Y.) VAH, his present post . . . Has been active on many committees of APMR, serving as chairman of the committee on ethics and brochure . . . Past-president of the New England chapter, he was program chairman of the 1955 Boston convention.

Samuel C. Burchart

Began his professional career as a physical director of YMCAs in Oklahoma and Texas . . . Entered military service in 1942 serving as a cadet physical instructor; was later commissioned and served as a reconditioning officer in several general hospitals and one convalescent hospital . . . Entered CT in 1946 at VAH, Richmond where he has served as chief for several years . . . At present serving second year as president, Mid-Atlantic chapter, APMR.

GENERAL ASSEMBLY ELECTION, JULY 22, 1958

Candidates 1958 — 1959

George Heos

A former all-around athlete at Tufts College, he was an amateur wrestler for nearly 20 years; taught judo in the Army as well as serving as a reconditioning instructor in the ETO . . . Entered CT at the Cushing VAH in Framingham, Mass. in 1953, transferred five years later to his present position at Bedford . . . Has long been associated with the Boston YMCA as full and part-time director . . . Well known in New England wrestling circles as an outstanding college referee . . . Active in the affairs of the New England chapter, APMR.

Lester P. Burrowes

Candidate for third term as secretary, he was for two years secretary-treasurer of the Southeastern chapter and president of that organization in 1955 . . . Has been a member of the CT staff at the Jackson (Miss.) VAH since 1946 as supervisor of the NP section . . . Served two years as chairman of the APMR constitution committee . . . Member of the Governor's Committee for Employment of the Physically Handicapped, State of Mississippi.

Raymond B. Heaslet

Candidate for third term as association treasurer, he is past-president of the Southeastern chapter . . . For past eleven years, he has been Exec. Asst. PM&RS, at VAH, Tuscaloosa, Ala. . . . Graduate in physical education from Birmingham Southern; served as high school teacher-coach for five years and later was advanced to principal . . . Was director of safety services for the American Red Cross in Tuscaloosa for two years . . . Served during WWII as physical reconditioning instructor.

Norman N. Tenner

Co-chairman of the 1957 Chicago convention, he is chief CT at the VA Research Hospital in Chicago and was formerly assistant chief at Hines . . . Graduate of No. Illinois State Teachers,, he taught physical education for three years prior to Navy service as chief specialist in athletics . . . Later received commission and served as deck officer on patrol craft . . . Developed Reach Jump chart, part of Navy Physical Fitness Test and has developed several pieces of CT equipment.

Charles E. Castle

Serving at present as second vice president . . . Graduate of Georgetown (Ky.) College in 1949 and holds the M.A. degree from the Univ. of Kentucky . . . Entered CT in 1950 as a therapist at the Chillicothe, Ohio VAH and was promoted to supervisor in 1954 . . . Has served as chairman of APMR's chapter and liaison committees and is active in the affairs of the Ohio-Kentucky chapter.

THE AMBASSADOR HOTEL, ATLANTIC CITY, NEW JERSEY

COOPERATIVE PLAN. Cont'd from P. 85

ties in an effort of this sort will probably always be limited; medical supervision will more than likely remain on a volunteer basis; overall plans and supervision will be in the hands of laymen. Correlating all of these factors in the interest of doing an adequate job of rehabilitation is truly a "grass roots" experience. Within the realm of efforts that have been made, I feel the results have more than justified the existence of this Center. The organization and administrative machinery that established this program and govern its operation are continually proving that a cooperative effort between community service agencies is both possible and practical in a program of this nature. It is one possible answer to a small community's need for a service of this sort.

PHYSIOLOGY. Cont'd from P. 86

which cause the body to act effectively as a whole. The selective innervation process under reference functions well even if large parts of the "executive machinery of the body" are absent as was recently shown with an analysis of neuromotor performances of a triple amputee.[7] Generally, Buytendijk has pointed out in an important communication that "patterns of innervation are by far more important as determinators of physical efficiency that is the state of musculature."[8]

The great philosopher of the nervous system, Sir Charles Sherrington, has raised the question as to the nature of the directing force behind the seemingly intelligent forces of innervation to which our contemplative mind has no access. Like the biblical writers of old he answers in a parable: "A branch stirs. The 'cause' is the wind. But the wind, what is the cause of the moving wind?"[9]

[9]C. S. Sherrington, *Man on his Nature*, London, Cambridge, 1940.

EXERCISE DEVICE. Cont'd from P. 95

1. Exercises are administered with a definite goal in mind, obtained by the simple objective test with the unaffected leg. Thus we know exactly when we have achieved our goal. (Objective criteria)
2. There is no slipping or sliding with the part of the apparatus which is in contact with the leg when the patient extends the knee. This is accomplished by the cuff which automatically adjusts to compensate for the change in the center of rotation of the knee, the cuff sliding on the bar but at all times in firm contact on the one site of the leg.
3. Use of the device promotes safety and comfort of the patient. Because of its mechanical action, there are no abrasions caused by rubbing, and no excessive pressure, resulting in greater comfort to the patient so that he can work more efficiently.
4. The device affords ease of administration. The patient is "set up" quickly and easily, nothing has to be attached or detached at the termination of treatment. The patient does not require as close supervision as he does under the older methods.

"From Other Journals"

Editorial, "Icarus Complex." *New England Journal of Medicine*, 257:1194-1195, December 12, 1958.

During the last ten years the ability of athletes to reach peaks of performance has improved remarkably. Physicians have wondered whether the increasing size and strength of the contestants, reflecting the effects of improved nutrition, have played a part. Antibiotics and modern medicine have given larger numbers of persons a chance to participate without significant impediments. Advances in physiology, nutrition and training methods seem to have been of little direct assistance. It has been suggested that amphetamine is being used by some athletes. There is no doubt but that this drug is potentially harmful. Its use is also ethically undesirable, as it gives a competitor an unfair advantage. The athlete who will use drugs is a problem in mental health and a potential problem in physical health.

Don H. O'Donoghue, "Prevention and Treatment of Acute Ligament Injuries in Athletics." *GP*, XVI:75-81, August, 1957.

The goal of the program for the treatment of athletic injuries is (1) to prevent injuries, (2) to minimize temporary disability, (3) to prevent permanent disability. The basic treatment of the athlete is that of any young, healthy human. An injury should be examined when it happens. The following are guides to therapy: Seek complete recovery; avoid expedience; use the best method of treatment; believe in competitive athletics; treat promptly. In ankle sprains the patient should exercise all available muscles. He should not be permitted to invalid himself. Muscle setting, active motion, protected weight bearing and heat are all useful. In knee injuries rehabilitation should start at once, with quadriceps setting, abdominal and back exercises, foot and ankle exercises. Torn ligaments or meniscus injuries may require surgery.

Th. Hettinger, "Muskelatrophie und Rehabilitation," (Muscle Atrophy and Rehabilitation) *Deutsche Medizinische Wochenschrift* 82:44:1875, Nov. 1, 1957.

In rehabilitation, one must try to prevent atrophy and to retrain the affected muscles while simultaneously avoiding overtaxing the patient. Investigations at the Max Planck Institute for Arbeitsphysiologie on normal subjects showed that when the daily demands of a muscle fell below 20 per cent of its maximum strength, a definite loss of muscle power occurred. No loss occurred when the muscle was taxed between 20 and 30 per cent of its maximum and when the demand was raised to 40-50 per cent of maximum, a definite training effect was noted. It was concluded that muscles taxed to 50 per cent of maximum for several seconds per day would show the best possible training effect for rehabilitation purposes. In atrophied muscles, the training effect is four to five times that of normal muscles.

—RK

G. A. Cronk, "Laboratory and Clinical Studies with Buffered and Nonbuffered Acetylsalicylic Acid." *New England Journal of Medicine*, 258:219-221, January 30, 1958.

Many combinations of acetylsalicylic acid with other chemicals have been promoted in attempts to increase its pain-relieving efficiency or to decrease side reactions. This study was designed to examine the relative efficiency of buffered and non-buffered aceytlsalicylic acid. A commercial buffered preparation and bulk acetylsalicylic acid were administered to patients, using a double-blind technique, and the time until relief was received was recorded. No statistically significant differences were found in the time to relief, in the percentage failing to receive relief, the degree of relief, or the duration of relief. Salicylic acid blood concentrations after administration of 0.6 g. of the two preparations were observed on normal volunteers. These were essentially identical.

Ernst Jokl, "The Athletic Status of Women." *British Journal of Physical Medicine*, 20:247-253, November, 1957.

Sports and games for women are significant elements of what is best in contemporary culture. The well-trained woman athlete today is superior to the average untrained young man in most branches of sport. The concept of a physical inferiority of the female exercise potential is no longer tenable as a categorical assertion. Athletics do not appear to interfere with the menstrual cycle and many records have been set by athletes who were menstruating. Assertions that competitive athletics are a potential source of difficulties in childbirth are false. Biologically, the female is more robust than has been assumed. Perhaps women attain maturity in athletic prowess earlier than do men, but it is not true that they invariably age earlier. Insofar as women's athletics involve experiences with motor acts, they are concerned with something that is not "specifically female" and provide values that are not known to the physically inactive individual.

Richard Asher, "A Woman with the Stiff-Man Syndrome." *British Medical Journal*, 5065:265-266, February 1, 1958.

A housewife suffered from muscular spasms which made her body so stiff she could scarcely move. She would scream, sweat and become pulseless. The spasms fractured her femur and her neck. When a Smith & Petersen pin was inserted, it became bent and a pertrochanteric fracture through the pin track was suffered. Varus of one ankle developed to the point that the sole faced upward. Postmortem findings included (1) abnormal variations in the size and staining reaction of muscle fibers; the swollen fibers were pale and lacking in striation; (2) increase of the connective tissues, both collagen and elastic fibers, principally the former; (3) localized areas of atrophy and fibrosis of muscles, accompanied by nuclear aggregates and lymphorrhages. These changes appeared to be primary and not related to any change in the CNS. This supports the idea the illness may be a type of myopathy.

Ernst Jokl *et al.*, "Ballistocardiographic Studies on Olympic Athletes." *American Journal of Cardiology*, 1:199-207, February, 1958.

The size of the heart of the majority of champion athletes is well above the average. However, the myocardium is not hypertrophied. The marked hypertrophy seen in patients with advanced hypertension is never seen in athletes. It is generally assumed that a normal heart is necessary for outstanding athletic performance, but very great physical feats are possible in the presence of a variety of cardiac diseases and abnorml conditions. The assumption that a normal heart is a prerequisite for outstanding athletic performance is not tenable.

Leo Wade, "Physical Examinations for Executives." *A.M.A. Archives of Industrial Health*. 17:175-179, March, 1958.

Three kinds of activity are basic in any adequate occupational health program: (1) elimination of hazards; (2) proper placement of workers; (3) periodical medical examinations. There is no clear cut evidence that the executive is exposed to any peculiar hazards. Obesity, arthritis and rheumatism, and hemorrhoids are the most common complaints among executives. The rheumatic complaints are significantly more frequent than in a control group, and further investigation of this will be made.

E. Lee Strohl, "Ladies of Lynn—Emphasis on One." *Surgery, Gynecology & Obstetrics*, 105:769-775, December, 1957.

Lydia Pinkham, Susan B. Anthony, and Mary Baker Eddy lived in Lynn, Mass., at the same time. Lydia Pinkham was the world's first successful businesswoman. She introduced new methods of advertising, emancipated women from the kitchen, and established the concept that one could be healthy, though female. Lydia was appalled by the ignorance of women about their own anatomy. She wrote a free booklet called *Yours for Health*. In it she described puberty, conception, birth, and the menopause. Her physiology was accurate, she used correct scientific terms, and her book would not require alteration today, though some additions might be made. A Lynn machinist gave her husband a recipe to cure "women's weakness" in part payment of a debt. Lydia added some ingredients and tried the brew on her friends. Its fame spread and finally strangers began asking to buy it. The Pinkham family was in desperate financial straits and her son Daniel suggested that they try to market it commercially. Success was immediate, and Mrs. Pinkham became as much a part of the American scene as Daniel Boone or Davy Crockett. The medicine contained 19% alcohol, and the Federal Trade Commission finally made charges of false advertising and fraudulent claims. Later it was shown that the compound contained estrogenic materials. Her descendants still carry on the business, although the alcohol content has now been reduced to 15 per cent.

George Pickering, "Regulation of Body Temperature in Health and Disease." *Lancet*, 7010:1-9, 4 January 1958.

Temperature homeostasis makes the animal independent of its external environment. The temperature of the body is determined by the balance between heat production and heat loss. Heat is produced by the organs carrying out their ordinary functions. It can be increased by shivering. Heat is lost from the respiratory tract, by warming inspired air and by evaporation; from the skin, by radiation, conduction and convection, by insensible water loss, and by sweating. Heat loss can be varied by varying the flood flow through the skin and increased by sweating. Blood flow through the skin is regulated partly by reflexes from receptors in the skin and partly by activation of a central structure. Sweating is controlled by a central temperature-sensitive mechanism. Shivering seems to be controlled by peripheral and central mechanisms. These mechanisms require nervous pathways in the central nervous system to and including the hypothalamus. How this mechanism is operated is controversial.

R. Passmore, "A Note on the Relation of Appetite to Exercise." *Lancet*, 7010:29, 4 January, 1958.

Medical writers often discount the value of exercise in the treatment of obesity on the grounds that extra physical activity will promote appetite and the energy value of the extra food consumed will offset the energy expenditure of the exercise. Animal studies show that short periods of exercise do not increase the appetite above the sedentary level. If this is true for man also, the physician should prescribe a suitable regimen of physical activities in cases of obesity.

Morton E. Lentan, Diseases That May Not Exist." *Northwest Medicine*, 57:319-322, March, 1958.

Vaginitis is called an inflammation and assumed to be infectious. It may be caused by nervous tension. The term trenchmouth probably includes a number of separate conditions. It is questionable whether tonsillectomy is ever necessary. If left alone, enlarged tonsils shrink to a respectable size. Virus pneumonia is a convenient label for any lower respiratory infection. It may be a condition, not a disease. Hypertension as a primary disease is very rare. Neurosis is a sign that things are going too well and the patient is bored by the lack of challenges in his existence.

Book Reviews

"Preventive and Corrective Physical Education," by George T. Stafford and Ellen Davis Kelly. Third Edition. (New York: The Ronald Press Company, 1958. 395 pp. $5.00)

When a text on corrective physical education has been in print for thirty years it is certainly evident that it has met with general acceptance. In this Third Edition the authors discuss corrective physical education, which they suggest should better be termed "kinesitherapy," and corrective therapy on separate pages, but both are defined as the scientific application of physical exercise to restore normal strength and function to affected body parts. In their opinion, then, these two are identical, but they differentiate between them and adapted physical education. Isolation of the latter as a separate specialty would not be acceptable to the vast majority of either corrective physical educators or corrective therapists, who would argue that adapted physical education is simply the process of restoring strength and function. A bibliography follows each chapter, but there are some surprising omissions—for instance there is no mention of Dening, Deyoe and Ellison's *Ambulation: Physical Rehabilitation for Crutch Walkers*, of Stone and Deyton's *Corrective Therapy for the Handicapped Child*, or of Brenner's *Therapeutic Exercise for the Treatment of the Neurologically Disabled*. One or two errors have also been noted: Goff's name is missing from the co-authors of *Diagnosis and Treatment of Postural Defects* and the word "and" has been omitted from Steindler's *Mechanics of Normal and Pathological Locomotion in Man*. The book contains some illustrations and is indexed.

PJR

"Physical Methods in Physiology," by W. T. Catton. (New York: Philosophical Library, 1957. 375 pp. $10.00)

The purpose of this little book is to describe experimental techniques which have been utilized in physiological investigations. Generally speaking, the author discusses certain physiological areas—blood, circulation, respiration, muscle, peripheral nerves and body heat—states what we know about them, and describes the apparatus and techniques by which this knowledge has been acquired. A final chapter on electronics discusses very sketchily some of the uses of electronics in physiological research but avoids specific discussion of electromyographs, electroencephalographs, electrocardiographs and similar instruments on the grounds that information on these topics is available in the specialized literature. For the same reason special senses are omitted, and only the briefest mention is made of biochemistry.

Within his self-imposed limitations the author has done an excellent job. His chapter on muscle is an excellent summary of our knowledge in this field and will be of particular interest to all corrective therapists. The text is well illustrated and has an adequate index. The book will be of decided value as a reference work for those teaching physiology or doing research therein. It is unfortunate that the high price will probably deter many prospective purchasers.

PJR

"Origami—Japanese Paper-Folding," by Florence Sakade. (Rutland: Charles E. Tuttle Company, 1957. 32 pp. $1.00 Paper)

Each page of this booklet is devoted to showing how a piece of paper can be folded in order to make some kind of a figure. Paper-folding is a new art to this reviewer, but it seems to have distinct possibilities for entertaining young children. Those charged with their care might do well to obtain a copy of this pamphlet.

PJR

"Scientific Basis of Athletic Training," by Laurence E. Morehouse and Philip J. Rasch. (Philadelphia: W. B. Saunders Company, 1958. 238 pp. $4.50)

Numerous articles and books have been written on the various phases and procedures for the training, protection, and treatment of athletes, but never, to the knowledge of this reviewer, has any one book on the subject been as inclusive and as effectively written as *Scientific Basis of Athletic Training*, by Morehouse and Rasch. Although the book is written primarily for the training of the athlete, the bulk of the material can be used as a guide for proper conditioning by anyone, especially those who are interested in attaining or retaining good physical performance.

The book opens with an historical review of practices and knowledge of the training of athletes from the earliest recorded history to the present. The authors then devote the next five chapters to the basic factors of kinesiology, physiology, behavioral factors, genetics, endocrinology, age, and sex. Nutrition and weight control are then discussed, followed by drugs in athletics, strength training, and massage. The last six chapters are concerned with the specific areas of protection, prevention and treatment of injuries, and a concluding chapter on the training room and its operation.

Although the text covers technical material, it is written in terminology that can be readily understood by the student, the teacher, the trainer, and the coach. It is highly recommended for both personal use and classwork.

HJB

"William Harvey," by Louis Chauvois. (New York: Philosophical Library, 1957. 271 pp. $7.50)

Probably every corrective therapist is aware of the fact that Harvey discovered the circulation of the blood, but it is doubtful that his knowledge of this individual goes much beyond this point. Those who desire to know more about him will find their wish granted in this book by a Lauréat de l'Institute et de l'Académie de Médecine and a winner of the Prix d'Histoire et de Philosophie des Sciences. Chauvois claims to have made an almost daily study of Harvey's works for the last thirty years, and certainly there seems to be no reason to doubt his claim. The amount of detail he has been able to assemble on a man who has been dead some 300 years is amazing. Those who think of medical researchers as leading cloistered lives may find their opinions changed after reading of Harvey's part in the famous witchcraft trials recently novelized in Jay Williams' exciting novel *The Witches* and of his part in the battle of Edgehill. Primarily (and properly), however, the book is concerned with Harvey's physiological studies and its greatest service will be in giving the student a proper appreciation of the man's genius and the contributions he made to medical science. There are a number of illustrations and an index. It is likely that Chauvois' book will remain the definitive biography of Harvey during the foreseeable future.

—PJR

"Psychological Disorder and Crime," by W. Lindesay Neustatter. (New York: Philosophical Library, 1957, 248 pp. $6.00)

This book does what it purports to do; that is, it makes clear to both the lay reader and the professional worker who comes in contact with the lawbreaker, the relationships between the acts of crime and the underlying psychiatric stresses which may cause them. A nice balance is maintained between explanation and examples (principally British in nature) as the author covers the usual psychiatric topics with a definite sense of authority and language know-how.

This is the type of book one wants to finish reading after starting this pleasant and informative assignment. After he has finished reading it, the reader will have a definite appreciation of the complex nature of crime, personality and punishment as society learns to deal with it.

NWF

"Longevity and Morbidity of College Athletes," by Henry J. Montoye et al. (Available from Phi Epsilon Kappa Fraternity, Indianapolis. 1957. 139 pp. $3.25. Paper)

One of the most spirited controversies in the history of sports medicine has been the question of the effect of athletic participlation on longevity. The problem has never been studied in greater detail or answered more positively than has been done in this monograph. It would perhaps be unfair to the authors to reveal their findings—those who want to know them should read the book. It is filled with fascinating subquestions to which the authors have been forced to return only tentative answers or to leave unanswered. Why is the percentage of athletes who smoke larger than the percentage of non-athletes who smoke? Why is the percentage of drinkers higher among athletes than non-athletes? Why did wrestlers and basketball players fail to contribute their share of men to the Armed Forces? Why is it that wrestlers are the only group who are all married and have all achieved a satisfactory economic status after graduation? Why is it that such a large percentage of baseball players and track men consider participation in their sports harmful? Why is it that only cross-country runners are unanimous in considering participation in their sport beneficial? There is subject matter for many a thesis and dissertation in these and other curious facts which their study reveals.

This monograph deals only with Michigan State University men and the authors warn that it is to be considered only as a pilot study; an analysis of the complete returns of all participating universities and schools will appear at some future date. The writers credit Phi Epsilon Kappa with having sponsored the study and Michigan State University with having made a grant to it. One wonders whether the time has not come for the Association for Physical and Mental Rehabilitation to make grants to studies of this type.

PJR

"Measurement in Physical Education," by Donald K. Mathews. (Philadelphia: W. B. Saunders Company, 1958. 359 pp. $5.25)

It is the author's contention that most of the texts on tests and measurements are designed for research personnel; this book is planned for the classroom teacher. A short chapter on statistics gives methods of performing the minimum calculations necessary to bring order out of the chaos of raw data. Proportionately more space is given to the testing of sports skills, sports and health knowledge tests, evaluation of social efficiency, and evaluation of body mechanics than is true of most other books on the subject. A chapter on grading in physical education and one on organization and administration of measurement programs are included. The text is clearly written, well illustrated, and supplied with an index. It should prove useful to the classroom teacher in both the selection and administration of tests.

PJR

"Fitness of American Youth." (Washington, D.C.: United States Government Printing Office, 1957. 55 pp. Paper. 25c)

This is the report made to the President of the first annual conference of the President's Council on Youth Fitness and the President's Citizens Advisory Committee on the Fitness of American Youth, held at West Point September 9-10, 1957. Six subject areas were defined: Youth Fitness and Special Interest Organizations; Youth Fitness Facilities and Programs; Harnessing Community Resources for Youth Fitness; Leadership for Youth Fitness; Youth Fitness Research; Telling the Youth Fitness Story. This pamphlet gives the area of discussion and action recommendations of the individual sections and of the group. An appendix contains some of the speeches made at the meeting and a list of conferees. The latter represented the farmers, racial groups, bankers, employers, labor, and other segments of the population. Surprisingly, the American College of Sports Medicine and the Association for Physical and Mental Rehabilitation are conspicuous by their absence.

PJR

"Corrective Therapy for the Handicapped Child," by Eleanor B. Stone and John W. Deyton. (Englewood Cliffs: Prentice-Hall, Inc., Third Printing, April, 1956. 315 pp. $4.75)

The fact that this book is now in its third printing suggests that it is probably the most successful text yet written by a corrective therapist. After a general discussion of the school rehabilitation program and the social and personality problems of the handicapped, the authors devote a chapter each to posture, the posture program, poliomyelitis, epilepsy, cardiac conditions, cerebral palsy, the palsied child, deviations causing lowered vitality, and other deviations of school children. Most chapters are followed by an annotated bibliography. An Appendix furnishes a check list by which the therapist may evaluate his or her program. An adequate index is provided. A number of illustrations serve to underline the author's statements. Attention is called to the fact that the organization of a rehabilitation program must be compatible with the local social and economic situation, a most important point which is all too often overlooked by enthusiastic teachers. Through out the text the emphasis is on the child rather than on presentation of a series of formal exercises. The basic philosophy presented is that the handicapped child must recognize and accept his limitations, but that happiness can be found within the frame of reference of the things which he can do. Such a child, the authors believe, will achieve a better adjustment within society than he will within the walls of a special institution. This approach is both sane and humanitarian. The book will repay close study by anyone connected with the field of rehabilitation.

PJR

"The Scientific Study of Social Behavior," by Michael Argyle. (New York: Philosophical Library, 1957. 239 pp. $6.00)

The author hopes that this book will not be regarded as a "textbook of social psychology." His intent is to limit the study to "social interaction." This he has done, and the book might well be regarded as a "textbook of social interaction." The style is one of reporting research studies in the area of social interaction. The tone is reflected by the fact that twenty-three pages of references are listed.

Of interest is the fact that this English author (Lecturer in Social Psychology in the University of Oxford) liberally documents his text with American research studies. For example, the following names and titles appear in his chapter on "Human Relations in Industry": Lewin, Maier, Wechsler, Sears, Roebuck and Company, Harvard Business School, Prudential Insurance Company, etc.

This is a first rate text and it will be of interest to phychologists, industrialists and administrators. It will be of value to the physician who is concerned about the problem of social interaction.

NWF

"Steps for Today Toward Better Mental Health." (New York: National Health Council, September, 1957. 118 pp. $1.50)

"We may not be crazier than ever, but it is crazier than ever to tolerate craziness." More and more people today agree with Dr. Laswell's statement made at the National Health Forum. We are not only concerned about but are demanding the cure and prevention of mental disease and defect. By focussing its 1957 Forum on mental health the National Health Council attempted to help its members—59 health organizations and agencies—to work out more effective mental health programs.

Included in the Forum's report are analyses of the impact of mental illness and the mental health movement upon civilization, practical suggestions on when to call the psychiatrist, a discussion dealing with the mental and emotional aspects of varied illnesses and disabilities, an examination of in-service training programs, and other practical and provocative ideas.

The Forum participants are all outstanding spokesmen in the field of health and welfare; their talks and discussions are brief and to the point; thus, this is a most readable report.

CTS

Meet Our Next President - Willis P. Denny

People who know Willis Denny remember him for the squint in his eye and a grinning smile; both of which denote a friendly interest in others. The president-elect of Association of Physical and Mental Rehabilitation capably performs the duties of chief of corrective therapy at the Veterans Administration Hospital in Dublin, Georgia, but his work-day rarely ever ends with his departure from the hospital. His efforts in behalf of disabled individuals, and more often, with the organizations with which he is affiliated, usually keep him busy well into the evening hours. Often at his own expense, and in what would otherwise be his leisure time, he makes frequent trips over the State and to adjoining States, discharging the duties he has willingly taken upon himself.

Those closest to him—his wife and the therapists who work with him—are quick to express praise and respect for this amiable gentleman, who always seems to be going somewhere. "He is interested in humanity in general," his wife states, "and therefore enjoys working with people." Personnel in the corrective therapy department in Dublin are unanimous and sincere when they say, "You couldn't work for a better boss."

Genuinely interested in all phases of rehabilitation Mr. Denny holds numerous offices in connection with his work. He is a member of the following groups: Rehabilitation Commission, the American Legion, Department of Georgia; Governor's Committee for Employment of the Physically Handicapped; Advisory Group, National Rehabilitation Commission, the American Legion; and National Hospital Committee of the AMVETS. He is also vice-president of the Dublin Civitan Club, a member of the Georgia Education Association, and is past-president of the Southeastern Chapter of the Association of Physical and Mental Rehabilitation. In October 1957, he received a Certificate of Commendation from Dr. David Quinn, Manager of the Dublin VA Hospital. Only three of these awards have been conferred at the Dublin institution in ten years.

Willis Parrish Denny was born February 26, 1917 in Wrens, Georgia, thirty miles from Augusta. When he was seven his family moved to Augusta where he completed his primary and secondary education, graduating from high school in 1934. Willis' close contact with people began at an early age.

As a teen-ager he gained considerable income through the management of three paper routes. This was a sizeable contribution to the family income, helping his father raise three boys and a girl. One evening in 1927 he was quite late coming home, causing his parents some concern—Lindbergh's flight across the Atlantic had boosted his sales by seventy-five. Mr. Denny participated in sports in high school, and because of his football playing ability was given a scholarship to Oglethorpe University, a Presbyterian school near Atlanta. The scholarship plus part-time work enabled him to finish in 1938, with a major in Business Administration and a minor in Physical Education. That fall he obtained a teaching position and for the next few years taught and coached in Bainbridge, Georgia. Mr. Denny was successful as a coach and enjoyed it.

In December 1943 he was inducted into the Army. After graduation from Officer's Candidate School, he took refresher courses in physical education at Washington and Lee University. Assigned to the Medical Service Corps he served as chief of physical reconditioning at a number of Army hospitals. During the Korean action he held this post at the 279th General Hospital in Osaka, Japan. After his discharge from the service in 1947, Mr. Denny took a position as corrective therapist at the Dublin hospital. He re-entered the service in 1950, and held the rank of Captain at the time of his discharge in 1954. In 1943 Mr. Denny married Wynelle Griffin. They have two children, Willis Junior, seven, and Kay, twelve.

LOGAN OWEN, JR.

"The Doctor Eyes The Poor Reader," by D. G. Schubert. (Springfield: Charles C. Thomas, 1957, 95 pp. $3.75)

This book gives a panoramic approach (1) to the problems of the poor reader, (2) the causes for poor reading, and (3) therapy and remedial techniques. The title is not in keeping with the tone of the text. It is fairly academic in its style, and the medical profession will find it readable. But the average parent of the average poor reader (for whom the book is also intended) will find much of the material difficult to understand. Still, there are many suguestions in this book which will prove helpful to the person who finds that he is dealing with a poor reader.

NWF

"Book of Indian Life Crafts," by Oscar E. Norbeck. (New York: Association Press, 1958. 253 pp. $5.95)

Indian craft work has always fascinated the American youngster. Probably it always will. Those who have the responsibility for supervising Cub Scouts, Friendly Indians, Campfire Girls, and other youth groups, or of providing recreation for children during the period of convalescence, will find this a mine of information. Every facet of the subject is covered—description and use, materials, tools and equipment, instructions and decorations. Lists of suppliers of materials, bibliographies, Indian names, and other helpful information are included. The text is profusely illustrated by John B. Eves. This book should prove extremely useful to anyone concerned with hobby work of this type.

PJR

"Deafness, Mutism and Mental Deficiency in Children," by Louis Minski. (New York: Philosophical Library, 1957, 82 pp. $3.75)

This book stresses the point that it is important to distinguish between real mental deficiency and apparent mental deficienoy caused by deafness. Once this point is established by explanation and examples, the rest of the text is devoted to (1) the management of hearing centers and (2) the methods of assessment for hearing deficiencies, such as observation, audiometric tests, psychological tests, and electrophysical tests. The principles involved are sound. No remedial techniques are discussed. The book should be useful to pediatricians, speech therapists, otolaryngologists, psychiatrists, and others.

NWF

"How to Keep Fit and Like It" by Arthur H. Steinhaus, Second Edition. (Chicago: The Dartnell Corporation, 1957. 72 pp. 50c. Paper)

This is a revised and enlarged edition of the author's previous pamphlet. It is written in popular style and designed to interest the average individual in improving his fitness. Fitness is defined as freedom from disease, functional ability to do the day's work, an alert mind, and a secure spirit. Tests of fitness, sleep, body mechanics, conditioning exercises, calorie tables, health superstitions, and related subjects are briefly covered. The booklet is profusely illustrated. It should be a popular item at YM and YWCA's, adult night schools, and similar centers.

PJR

"Modern Bodybuilding," by David G. Johnson and Oscar Heidenstam. (New York: Emerson Books, Inc. 1958. 177 pp. $3.95)

Johnson is president of the World Federation of Bodybuilding; Heidenstam was a Captain in physical training during the war and later a technical officer of the fitness and hygiene wing. In this little book they have combined their talents to produce a manual of physical training methods. After a very elementary discussion of kinesiology, diet, age, proportions and similar topics, they take up calisthenics and then move on to cables and weights. Approximately half of the text is devoted to weight training, with one chapter listing recommended exercises for participants in various sports. Rather surprisingly, wrestlers are not mentioned, although they are surely one group who has a great deal to gain from weight training. A glossary of terms common among weight trainers is included. It seems to be stretching a point to define bodybuilding as the *science* of improving one's physique. The book is simply written and contains numerous illustrations. It should be found useful by the novice weight trainer.

PJR

News and Comments

POSSIBILITY OF VACCINE LINKED TO CANCER RESEARCH

Research evidence that could point the way toward development of a vaccine for treatment of some types of cancer has been uncovered by Veterans Administration hospital doctors at McKinney, Tex., VA has announced. Dr. Russell H. Wilson of the McKinney hospital said work by him and his colleagues indicates the existence of a natural defense mechanism of the body against cancer, the same type of body reaction which makes vaccine against polio and other diseases possible. The work has been based on findings by James W. Finney, research microbiologist, which indicate that, under certain circumstances, products from cancer cells may cause the body to produce substances—perhaps antibodies—which may travel through the blood stream and attack the cancer cells.

Dr. Wilson said the researchers are pursuing these findings in the hope of discovering a way to activate this reaction to an extent that would be useful in destroying some types of malignant growth. Others working on the project are Dr. Dale A. Clark, research biochemist, and Dr. William L. DeGinder, radiologist. They are working both with tissue cultures and with patients who have volunteered for the studies, Dr. Wilson said.

In general, Dr. Wilson explained, cancer tissue is removed by surgery and processed to obtain certain proteins, which are injected into the patient to stimulate production of the blood substances (serum fractions) active against the cancer. After blood tests to determine how much the patient is reacting to these proteins, blood is taken from the patient and the blood substance which is active against cancer is separated. When this fraction is injected into the patient, there is sometimes a noticeable decrease in the size of tumor nodules within a few days, Dr. Wilson reported. He said the research group now plans to attempt to isolate from the blood serum and from tumors the specific substance or substances responsible for the effects observed thus far.

RADIOISOTOPES SHOW SITES OF ACTION OF INSULIN IN HUMANS

The exact site at which insulin acts in the human body has been shown for the first time by a new radioisotope test devised by two doctors at the Veterans Administration hospial in Washington, D.C. They are Dr. Edward D. Freis, chief of medical service, and Dr. Harold W. Schnaper, assitant chief of medical service.

Dr. Freis said although past investigations in animals had shown that insulin acts locally on muscle cells to increase their uptake of glucose, or blood sugar, the VA work is the first evidence that the same process occurs in humans. The finding that insulin acts locally on human tissue cells and the new radioisotope test will be used to study diabetes and newer drugs for diabetes, he said. The research is aimed at helping insulin-resistant diabetic patients who must be given unusually large doses of insulin because their bodies cannot use this substance properly, Dr. Freis explained.

He said the next step will be an attempt to discover whether insulin is broken down in the blood or liver of insulin-resistant diabetics before it can reach the tissue cells, or whether it reaches the cells but does not penetrate them in a normal way.

Under the new radioisotope test devised by the two doctors, glucose tagged with the radioisotope of carbon, a radioactive dye, and another radioisotope-tagged substance, thiocyanate, are injected into an artery, Dr. Freis said. Later, an injection of insulin and a second injection of the glucose, dye, and thiocyanate mixture plus insulin are given. By comparing the proportions of the substances in the injections with the proportions of them in blood from an artery and from a vein, the site of action of insulin on tissues of the forearm can be determined, Dr. Freis said.

A paper on the work was presented by Dr. Schnaper at the eastern section meeting of the American Federation for Clinical Research at the Yale University School of Medicine in New Haven, Conn., in December.

NEW VA DIVISION TO CONDUCT GERIATRIC RESEARCH

Research in aging will be conducted by Veterans Administration under a new division of the Department of Medicine and Surgery in Washington, D. C., the agency has announced. The division will survey possibilities for research in retarding physical or mental deterioration, through study of the aging process as such, as well as coordinate the approximately 2,000 studies of disorders associated with aging that are underway in VA hospitals.

Dr. Charles C. Chapple, former chief of VA's clinical studies division, will head the new division. He said the unit will enable VA to focus skills of specialists on problems of aging. Chemical, nutritional, psychological, biophysical, social, and clinical aspects will be considered as a whole, as these affect the individual.

Dr. Chapple said the division's program will be developed under guidance of five university consultants, each of whom is outstanding in a separate scientific field. Chairman of the five-man group, known as the VA Advisory Committee on Problems of Aging, is Dr. Ralph W. Gerard, professor of neurophysiology at the Mental Health Research Institute of the University of Michigan. Others are Dr. Wendell H. Griffith, chairman of the department of physiological chemistry at the University of California School of Medicine; Dr. Eugene M. Landis, George Higginson, professor of physiology at Harvard Medical School; Albert I. Lansing, Ph. D., chairman of the department of anatomy at the University of Pittsburgh School of Medicine; and Dr. William D. Stroud, professor of cardiology in the Graduate School of the University of Pennsylvania.

Work of the VA clinical studies division will be coordinated by an acting chief from the division's staff until Dr. Edward Dunner, secretary of the Committee on Chemotherapy of Tuberculosis which coordinates the joint VA-Armed Forces study of newer drugs for TB, is available for appointment as clinical studies chief in June 1958, VA said.

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NEW TRANQUILIZERS TO BE TESTED

Four newer tranquilizing drugs will be evaluated for use in treatment of mental illness by a large-scale Veterans Administration study. Dr. Jesse F. Casey, VA director of psychiatry and neurology service in Washington, D. C., said the study just getting underway at 35 VA hospitals is the third in a series of VA major cooperative research projects on tranquillizers. Drugs to be used are the compounds (phenothiazine derivatives) proclorperazine, triflupromazine, perphenazine, and mepazine, which show promise in treatment of mental illness. Reports of clinical use of these for patients indicate the newer compounds are more effective therapeutically and produce fewer side effects, or unrelated physical reactions, than older tranquilizers.

Chlorpromazine, a tranquilizer now in general use for mental patients, also will be administed in the VA study, since comparison of its effects will aid in evaluating effects of the other drugs. Both fixed and variable dosages of drugs will be used. The carefully controlled twelve-week project will involve veterans newly admitted to the 35 participating hospitals—a total of about 800 patients with schizophrenia, the most baffling mental illness. In addition to tranquilizers, all will receive other treatment, such as psychotherapy and the physical medicine and rehabilitation therapies as indicated by their individual needs, Dr. Casey said.

Extensive evalutions of symptoms and behavior of patients will be made before drugs are administered, during medication, and at the end of the study. Improvement in symptoms and behavior will be noted to determine which of the new drugs is most effective. The project is part of VA's continuing chemotherapy in psychiatry studies, begun in 1956. Dr. Casey is chairman of the executive committee for the program.

VA DEVELOPS PULMONARY FUNCTION TESTS

New standards for normal lung function in humans and a better instrument for doctors to use in testing lung function have been developed by Veterans Administration. Both will be valuable aids for diagnosing the degree of lung damage in patients with lung disease, VA said.

The set of standard values for various lung function tests is for normal persons in all age groups of the veteran population. The instrument is a spirometer, or device for measuring the volume of air breathed. These resulted from a large-scale cooperative research program begun by VA in 1954. The next phase of the long-term VA-Armed Forces study will be concerned with measuring and interpreting abnormal lung function in various diseases.

The researchers are sudying emphysema, a condition in which the lungs over-expand and breathing becomes difficult and less effective. Emphysema is common in men and rare in women. It is associated with asthma and chronic bronchitis, but in many cases develops without apparent cause. VA doctors hope to find drugs that will be more useful in treating this disease. Pulmonary function tests also are being done on patients before and after chest surgery, to develop pre-operative lung function values and to investigate how lung function changes after surgery, VA said.

The new chairman for the study is Dr. John H. McClement, chief of the chest service at Bellevue Hospital in New York and a VA consultant. Dr. McClement formerly headed the tuberculosis service at the VA neuropsychiatric hospital in Salt Lake City. He was a member of the planning group that began the study in 1954.

Eighteen VA hospitals and Fitzsimons Army Hospital in Denver are participating in the research.

TROPICAL FRUIT YIELDS HEALING AGENT

A new treatment that produces better healing of infected wounds has been reported by Veterans Administration. Surgeons at the Fort Howard, Md., VA hospital have found that application of a substance from the tropical fruit, the Carica papaya, with other chemicals gives a high rate of healing in infected surface wounds.

Dr. Joseph M. Miller of the Fort Howard hospital said an ointment containing a combination of papain, which is obtained from the papaya, urea, and the water-soluble derivatives of chlorophyll produced excellent results in 100 of 106 infected wounds treated, good in one, and poor in five.

In the five patients with wounds which failed to heal, gangrene was present and the blood supply to the infected areas was extremely poor, Dr. Miller said. However, he added good results were obtained in four patients in whom gangrene was present. The new ointment, which was designed for the treatment of infected surface wounds, should not be used for the treatment of lesions of cavities of the body unless they communicate with the surface of the body, VA said.

Dr. Miller and his associates, Dr. George C. Godfrey, Dr. Milton Ginsberg, and Dr. Constantine J. Papastrat have found that the papain ointment works equally well in all infections which are commonly encountered in surgical practice. They said the type of bacteria present did not seem to influence the results, and the ointment did not produce toxic reactions.

BLIND VET REPAIRS MACHINES BY TOUCH

George Douglas West cannot see the complex typesetting machinery he repairs at the Lafayette, Ind., Journal-Courier. Six years ago he lost his sight at Heartbreak Ridge in Korea.

Yet this 29-year-old veteran—first sightless repairman ever to receive a journeyman's card from the International Typographical Union—has learned to trouble-shoot his newspaper's 11 Intertype machines entirely by sensitive touch and keen hearing.

West began to train for his trade as an apprentice at the Journal-Courier in 1949. Two years later, in January, 1951, he joined the Armed Forces, and in August of that year he was sent to Korea with the Second Division. At Heartbreak Ridge a mortar shell burst in his face, blinding him.

Back in the United States, he entered the Veterans Administration hospital in Hines, Ill., for special rehabilitation for the blind. Here he learned how to get about with a cane, to use Braille, to lead an independent life. Here, too, he gained the confidence that in spite of his blindness he could work again.

He returned to the Journal-Courier where with the tutoring of a fellow machinist and the help of his wife, Ruth, he studied and mastered the Intertype machine—a machine of some 6,000 parts!

Today he holds a key position at the newspaper. When a machine breaks down, West simply asks the operator how it was acting when it stopped operating.

"If you know that, it's easy to figure out what's wrong with it," he said. "I may not be able to see the machines, but that doesn't matter. The important thing is that I can keep them running."

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BLIND VETERAN WINS SUCCESS AS SOCIOLOGIST

A well-meaning visitor to a military hospital ward for the war-blind asked a young patient, "Son, do you mind if I cry for you?"

"No Ma'am," he replied, "not if you do it on the other side of the room."

A 32-year-old veteran, blinded in combat, cites this incident in a book, published recently to demonstrate what can happen when "the world splits into blind and sighted hemispheres" because of lack of understanding on both sides. The veteran, Dr. Alan G. Gowman, is a sociologist. He received his PhD degree from Harvard University in 1955 under Public Law 16, a vocational rehabilitation training program for disabled veterans. His book, "The War Blind in American Social Structure," was published by the American Foundation for the Blind.

The blind don't want tears, he contends. Instead, they want to be treated with the same "casual unconcern" that marks normal relationships between person and person.

Dr. Gowman offered this advice to the sighted: "Don't push yourself on a blind person. Give him the opportunity of choice. Does he or does he not want help? If he does, find out from him how best to help him. Only by asking can you overcome lack of knowledge."

A native of Chappaqua, N. Y., Dr. Gowman entered the Army in 1943, shortly after graduating from high school. He served overseas with the Fifth Army. At Anzio he had taken over the duties of his sergeant, who was wounded. While passing out ammunition and supplies to the men of his platoon, mortar fragments hit him twice. Both his cheek bones and his nose bone were shattered. His sight was gone. He was unconscious for almost a month, and weighed only 89 pounds when he arrived at the Army's Valley Forge hospital. Plastic surgery restored his face. He spent many months learning how to cope with the difficulties of blindness.

Finally he applied to Veterans Administration for Public Law 16 training, and entered Union College in Schenectady, N. Y., in the fall of 1946. He received his AB degree, plus a Phi Beta Kappa key, in the spring of 1949. That same year he entered the Harvard University Graduate School, where he earned his MA and PhD degrees.

A year as a teaching fellow at Harvard followed. Then he obtained a two-year grant from the Russell Sage Foundation. He spent the first year doing research on direct service agencies for the blind in metropolitan New York. During his second year, which has just begun, he plans to study Federal programs for the blind.

NEW DRUG SHOWS PROMISE AGAINST BLASTOMYCOSIS

Promising results from a test of a new antibotic, amphotericin-B, against the tuberculosis—like fungus disease blastomycosis has been announced by Veterans Administration. Dr. Harry E. Walkup of the VA hospital at Oteen, N. C., chairman of the VA cooperative study said the new antibiotic is effective in some cases in which treatment with 2-hydroxystilbamidine, the older drug generally used against the disease, has not been satisfactory. The findings are not conclusive, he emphasized, since amphotericin-B has been used only about 10 months in a limited number of patients.

Blastomycosis imitates tuberculosis in many aspects and often has been confused with TB of the lungs, Dr. Walkup said. The fungus infection is found in the southeastern and north midwestern states, with sporadic cases occurring throughout the country. Dr. Walkup said the fungus is believed to enter the body through the respiratory tract.

The cooperative study is aimed at finding a better drug treatment for blastomycosis, he said, and also is designed to locate the source of the infection and to learn more about distribution of the disease in the United States. The study is coordinated by the research service at VA Central Office in Washington, D. C. Participating VA hospitals are at Oteen, New Orleans, Memphis, and Durham, N. C.

Chapter Activities

OHIO-KENTUCKY CHAPTER

The Ohio-Kentucky chapter held its spring meeting in joint sessions with the Ohio Valley chapter of the American Association for Rehabilitation Therapy on April 25 and 26 at Lexington, Ky.

The first day's meeting was held at the U. S. Public Health Hospital for Drug Addiction. After a welcoming address by Dr. J. C. Sturgell, clinical director of the hospital, a tour of the institution was conducted by C. B. Janis, personnel assistant. A panel discussion on present status and training needs in medical rehabilitation therapy was then presented with Don D. Allison, medical coordinator, VAH, Chillicothe, Ohio, acting as moderator. Serving on the panel were Dr. James A. Grider Jr., chief, psychiatric service, USPHSH; Dr. Rex O. McMorris, director of the Louisville Rehabilitation Center; Dr. Logan Gragg, superintendent of Eastern State Hospital; Dr. Joseph L. Wilson, acting chief, PMRS, VAH, Lexington, and Dr. William R. Willard, dean of the Univ. of Kentucky Medical Center.

The second day's meeting was held at the Eastern State Hospital in Lexington. Dr. Gragg welcomed the conferees to the hospital after which a slide presentation of patient treatment at the hospital was shown. The morning program concluded wih a panel discussion on "Research into Cause and Treatment of Mental Illness." Stephen J. Cornett, supervisor of rehabilitation at the guest hospital, moderated this meeting which included on the panel: Dr. Erwin W. Straus, director of medical research and education, VAH Lexington; Dr. Ray H. Hayes, director of the Lexington Psychiatric Clinic; and Richard M. Griffith, Ph.D., chief of research psychology at the VAH, Lexington.

The chapter business meeting concluded the conference. At this meeting, Mark Howett was elected president-elect of the organization, and Wallace O. Hawkins Jr. was elected secretary-treasurer. Incoming president is John Murphy of Chillicothe. The fall meeting will be held in Indianapolis.

—MOH

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Shown is model no. 9910 (it includes attachments shown)

LaBerne Exercise Mat

The LaBerne Exercise mats were designed after much study and research with a number of Physical Medicine Departments. These mats are made by a special process, using polyurethane foam. Cover is tearproof, waterproof nylon. Weight of mats—8 oz. per square foot. Made in 48" width, any length. Stock size is 48" x 84" Model no. 9100

Any width or length available on special order.

PAT. PENDING

WRITE FOR LITERATURE

WALK-OFF

La Berne Manufacturing Company, P. O. Box 5245,
Columbia, S. C. Phone SUnset 7-6162
ORIGINATORS OF THE "WALK-OFF" PHYSICAL THERAPY TABLE